SONY

PROFESSIONAL DISC CAMCORDER

PDW-850

XDCAM Power HAD FX

MPEG HD422 MPEG HD MPEG IMX

DVCAM

OPERATION MANUAL English

1st Edition (Revised 1)

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Before Using the Unit

After purchasing this unit, before operating, it is necessary to set the region of use.
(Unless this setting is made, the unit will not operate.)

For details of these settings, see "Setting the Area of Use" (page 37).

Note

Before attaching/removing optional components or accessories to/from the camcorder, be sure to turn the power of the camcorder off.

Chapter 1 Overview

Features

$^2/_3$-inch full-HD "PowerHAD FX" CCDs

- IT (Interline Transfer) $^2/_3$-inch progressive image sensors with 2.2 million pixels, for full HD resolution (1920 × 1080)
- "PowerHAD FX" CCDs, featuring a signal processing ASIC with 16-bit A/D converters

These new image sensor technologies enable the capture of very high-quality images, with F11 (59.94i) and F12 (50i) sensitivity and an SN ratio of 62 dB. [1)]

1) With noise suppression on (off value is 58 dB) Noise suppression uses proprietary Sony signal processing technology to suppress noise in high-frequency regions.

Mechanisms for high reliability

A new duct cooling system prevents overheating inside the unit and on its surfaces, for greater reliability in high-temperature environments. Reliability is also enhanced by the drip-proof design.

Recording can continue even when the unit is subjected to jarring shocks, because data is stored in shockproof memory before being recorded to the media. Reliable recording is ensured by a recording verification function, similar to the confidence playback function of tape recorders, qualifying the unit for use in demanding broadcast applications.

Multi-format support

The unit supports various system frequencies (1080/59.94i, 1080/29.97P, 1080/50i, 1080/25P, 1080/23.98P, 720/59.94P, and 720/50p), offering the flexibility needed for worldwide HD recording. It also supports recording and playback of SD signals (both NTSC and PAL), allowing a stepwise transition from SD to HD systems.

A multi-format conversion function enables up- and down-conversion between SD and HD, and cross-conversion between 1080 and 720. Squeeze or edge cropping can be selected as the aspect pattern in up- and down-conversion between SD and HD.

Note

It is not possible to combine material recorded in different frame frequency groups on single disc *(see page 52)*.

Recording of more than 90 minutes of high-quality video and audio data

- Signals captured by the full-HD (1920 × 1080) image sensors are recorded in MPEG HD422 format [1)] for consistently high image quality. [2)]
- The unit supports recording of four audio channels [3)] sampled at 24 bits for high quality.
- Dual-layer Professional discs can record about 95 minutes of high-quality video and audio data.

The generous recording times and the high-quality of the recorded video and audio allow this unit to meet the most stringent requirements of production teams in a wide range of genres, from news gathering through digital cinema and program production.

The unit supports a variety of HD formats, including formats with 720 lines of resolution.

1) The MPEG-2 422P@HL codec performs 4:2:2 sampling and records at a video bit rate of 50 Mbps.
2) Image compression uses the MPEG-2 Long GOP system.
3) The PDW-HD1500 supports recording of up to eight channels in MPEG HD422 format.

Format compatibility with earlier models

The unit is capable of recording in the MPEG-2 MP@HL 35/25 Mbps formats used by earlier XDCAM HD devices. These formats offer longer recording times than the MPEG-2 422P@HL 50 Mbps format.

It is also capable of recording and playback in the MPEG IMX 50/40/30 Mbps and DVCAM 25 Mbps formats.

Rich selection of interfaces

- HDSDI and SDSDI output connectors: Allow free combination of HDSDI and SDSDI signals. Timecode and other text data can be superimposed on signals from one of the two interfaces.
- Composite signal output connector
- Selectable video input connectors: The unit is designed to support recording in every type of environment, including reporting by pool coverage teams. HD SDI/SD SDI or composite signals can be selected. SD signals can be upconverted and recorded as HD signals.
- Gen-lock input connector: Enables synchronized operation of multiple units, with synchronization possible to either VBS or HD-Y signals.
- Audio input connectors: Supports AES/EBU signal input, in addition to microphone input, +48 V microphone input, and line input.
- Timecode input and output connectors
- Network connector: Enable transfer of MXF-format files.
- USB connector: Enables use of a Windows USB keyboard or mouse. You can also connect a USB flash drive to record proxy data or load planning metadata, or connect the optional CBK-WA01 Wi-Fi Adaptor or CBK-WA100 Wireless Adaptor to connect to a wireless LAN network.

Features for improved performance under various shooting conditions

Picture Cache function

The unit can utilize its internal memory to continuously record the current video input, allowing recording to commence a certain time (2 to 30 seconds) in advance of the time when the recording button is pressed, and allowing discs to be exchanged seamlessly without interrupting the recording.

Two optical filters

The unit is equipped with separate CC filters and ND filters.

Noise suppression circuits

New noise suppression circuits offer improved performance under difficult evening or nighttime shooting conditions.

Slow shutter function

A maximum of 16 frames can be accumulated using the slow shutter function. In low light levels this allows clear and noiseless video to be shot, and provides a fantasy video effect with ghost images.

Time lapse function (interval recording)

Using this function slow-moving subjects can be shot with the movement compressed in time. This is convenient for many applications, such as monitoring plant growth, or the progress of a construction site.

Slow & quick motion function [1)]

This function allows the shooting frame rate to be different from the playback frame rate, for the same effect as overcranking or undercranking a film camera. Unlike low-speed or high-speed playback of normally shot video, this provides a smooth slow-motion effect, or action speeded up beyond actual speed.

1) This function is available when the recording format is MPEG HD422, 50 Mbps, and the resolution/system frequency is 1080/23.98P, 1080/25P, or 1080/29.97P.

Freeze Mix function

This allows a still image from previously captured video to be aligned with the current video output from the camera. Thus you can adjust the camera position to get exactly the same framing for new shots. For example, this function makes it easy to frame summer and winter shots of a landscape scene in exactly the same way.

Digital extender function

This magnifies the center section of the video. It utilizes electronic processing, which prevents the decrease in sensitivity (F-drop) that occurs when the lens extender function is used.

Focus assist function

A focus assist indicator is displayed in the viewfinder to aid in focusing.
This function is useful when trying to focus using only the image in the viewfinder.

Assignable switches

Frequently used function can be assigned to switches for quick and convenient operation.

Hyper gamma

This enables a wide dynamic range without using the Knee function, by smoothly compressing the high-luminance range.

Supports digital wireless microphone system

The digital wireless microphone system offers high-quality, superior resistance to noise, and simultaneous multi-channel operation. Installation of the DWR-S02DN Digital Wireless Receiver [1] enables simultaneous reception of two channels.

1) These products are not available in countries where they are prohibited by radio frequency regulations.

3.5-inch high-resolution LCD monitor

The high-resolution 3.5-inch QHD color LCD monitor displays audio meters, menus, disc and battery capacity indications, and thumbnails of clips stored on disc.

Inherits unique features of XDCAM series

The unit inherits the workflow features of the XDCAM series, including thumbnail display and metadata management, and improves them by introducing an improved man-machine interface. Metadata includes new user-settable clip flags (OK/NG/KEEP) in addition to the existing Rec Start essence marks. The new metadata types enable more efficient workflows when clips recorded on this unit are edited on nonlinear editing systems.

Software Downloads

When the unit is used with a PC connection, download any device drivers, plug-ins, and application software you require from the following websites.

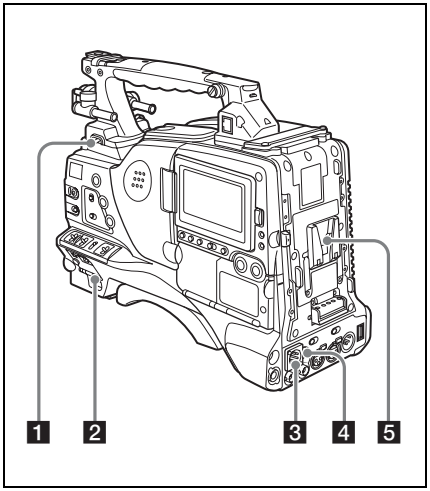
Sony Professional products website:

U.S.A.	http://pro.sony.com
Canada	http://www.sonybiz.ca
Latin America	http://sonypro-latin.com
Europe	http://www.pro.sony.eu/pro
Middle East, Africa	http://sony-psmea.com
Russia	http://sony.ru/pro/
Brazil	http://sonypro.com.br
Australia	http://pro.sony.com.au
New Zealand	http://pro.sony.co.nz
Japan	http://www.sonybsc.com
Asia Pacific	http://pro.sony-asia.com
Korea	http://bp.sony.co.kr
China	http://pro.sony.com.cn
India	http://pro.sony.co.in

Sony Creative Software, software download page:
http://www.sonycreativesoftware.com/download/software_for_sony_equipment

Locations and Functions of Parts and Controls

Power supply



1 LIGHT switch

Determines how a video light connected to the LIGHT connector *(see page 13)* is turned on and off.

AUTO: When the POWER switch of the video light is in the on position, the video light is turned on automatically while the camcorder is recording.

MANUAL: You can turn the video light on or off manually, using its own switch.

Notes

- When this switch is set to AUTO, at the beginning of the recording, the picture is recorded even though the lighting may fluctuate until the video light comes on. If the beginning of the recording is important, you should set this switch to MANUAL.
- To ensure proper operation of the video light, Sony recommends the use of the BP-FLX75 Battery Pack with the camcorder.

2 POWER switch

Turns the main power supply on and off.

3 DC IN (DC power input) connector (XLR type, 4-pin, male)

To operate the camcorder from an AC power supply, connect an optional DC power cord to this terminal and then connect the cord to the DC output terminal of the BC-L70A, BC-L160, or another battery charger.

4 DC OUT 12V (DC power output) connector (4-pin, female)

Supplies power for a CBK-WA100 Wireless Adaptor (not supplied) (maximum 1.0 A).
Do not connect any equipment other than the wireless adaptor.

5 Battery attachment shoe

Attach a BP-FLX75 Battery Pack. Alternatively, you can attach an AC-DN2B/DN10 AC Adaptor to operate the camcorder on AC power supply.

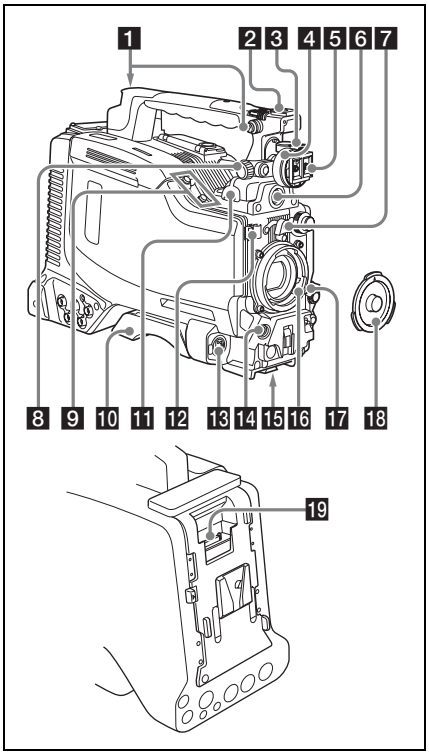
For details about how to attach the battery or AC adaptor, see "Preparing a Power Supply" (page 33).

For details about attaching a digital wireless receiver, see "Attaching a digital wireless receiver (when using digital wireless microphone)" (page 44).

Note

For safety and to ensure proper operation, use of the BP-FLX75 battery pack is recommended.

Accessory attachments



1 Shoulder strap fitting

Attach the supplied shoulder strap *(see page 47)*.

2 Accessory fitting shoe

Attach an optional accessory such as a video light *(see page 46)*.

3 Viewfinder front-to-back positioning lever

To adjust the viewfinder position in the front-to-back direction, loosen this lever and the LOCK knob. After adjustment, retighten this lever and the LOCK knob.

4 Viewfinder left-to-right positioning ring

Loosen this ring to adjust the left-to-right position of the viewfinder *(see page 35)*.

5 Viewfinder fitting shoe

Attach an optional viewfinder.

6 VF (viewfinder) connector (20-pin)

Connect an optional viewfinder.

Consult a Sony representative for information about available viewfinders.

7 Lens mount securing rubber

After locking the lens in position using the lens locking lever, fit this rubber over the lower of the two projections. This fixes the lens mount, preventing it from coming loose.

8 Viewfinder front-to-back positioning knob (LOCK knob)

Loosen this knob to adjust the front-to-back position of the viewfinder *(see page 35)*.

9 Fitting for microphone holder

Fit an optional CAC-12 Microphone Holder *(see page 42)*.

10 Shoulder pad

Raise the shoulder pad fixing lever to adjust the position in the front-to-rear direction. Adjust the position for maximum convenience when operating the unit on your shoulder.

For details of the adjustment, see "Adjusting the Shoulder Pad Position" (page 48).

11 LIGHT (video light) connector (2-pin, female)

A video light with a maximum power consumption of 50 W, such as the Anton Bauer Ultralight 2 or equivalent can be connected *(see page 46)*.

12 Lens cable clamp

Clamp a lens cable.

13 MIC IN (microphone input) (+48 V) connector (XLR type, 5-pin, female)

Connect a stereo microphone to this connector. The power (+48 V) is supplied via this connector.

14 LENS connector (12-pin)

Connect a lens cable to this connector.

Note

When connecting the lens cable to this connector, power off this unit first.

15 Tripod mount

When using the unit on a tripod, attach the tripod adaptor (optional).

16 Lens mount (special bayonet mount)

Attach the lens.

Consult a Sony representative for information about available lenses.

17 Lens locking lever

After inserting the lens in the lens mount, rotate the lens mount ring with this lever to lock the lens in position.
After locking the lens, be sure to use the lens mount securing rubber to prevent the lens from becoming detached.

18 Lens mount cap

Remove by pushing up the lens locking lever. When no lens is mounted, keep this cap fitted for protection from dust.

19 CA (camera adaptor) connector (50-pin)

Remove the connector cover, and connect the 50-pin connector of the optional CA-FB70/TX70 Camera Adaptor.

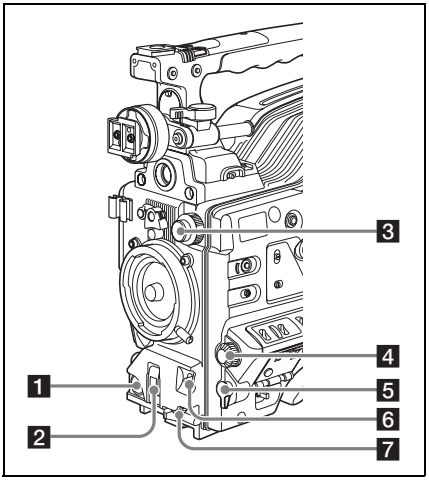
Note

If the camera control unit does not support SLS (slow speed shutter), the SLS display and SLS setting cannot be changed.

Refer to the Operation Manual of the CA-FB70/TX70 for more information about how to mount it.

Operating and connectors section

Front



1 REC START (recording start) button

Press to start recording. Press it again to stop recording. The effect is the same as that of the REC button on the lens.

2 SHUTTER selector

Set to ON to use the electronic shutter. Flick to SELECT to switch the shutter speed or shutter mode setting within the range previously set with the menu. When this switch is operated, the new setting appears on the setting change/adjustment progress message display area for about three seconds.

For details about the shutter speed and shutter mode settings, see "Setting the Electronic Shutter" (page 58).

3 FILTER selector

Switches between optical filters built into this unit.
When this selector is used with the menu item for filter selection display set to ON *(see page 202)*, the new setting appears on the viewfinder screen for about three seconds.

The unit is equipped with two switchable filters. You can switch between four electrical CC filters and four ND filters.

FILTER selector (outer knob) setting	CC filter
A	Cross filter [a]
B	3200K
C	4300K
D	6300K

a) A type of special effect filter. A cross of light appears in the highlight section.

FILTER selector (inner knob) setting	ND filter
1	CLEAR
2	$^1/_4$ ND (attenuates light to approximately $^1/_4$)
3	$^1/_{16}$ ND (attenuates light to approximately $^1/_{16}$)
4	$^1/_{64}$ ND (attenuates light to approximately $^1/_{64}$)

4 MENU knob

Changes the page selection or a setting within the menu.

For details about how to use the MENU knob, see "Menu Operations" (page 192).

5 EARPHONE jack (monaural, minijack)

You can monitor the E-E [1] sound during recording and playback sound during playback. When an alarm is indicated, you can hear the alarm sound through the earphone. You can use this with the EARPHONE jack on the rear of the unit at the same time. Plugging an earphone into the jack automatically cuts off the built-in speaker.

1) **E-E:** Abbreviation of "Electric-to-Electric". In E-E mode, video and audio signals input to the camcorder are output after passing through internal electric circuits only. This can be used to check input signals.

6 AUTO W/B BAL (automatic white/black balance adjustment) switch

Activates the automatic white/black balance adjustment functions.

WHT: Adjusts the white balance automatically. If the WHITE BAL switch *(see page 17)* is set to A or B, the white balance setting is stored in the corresponding memory. If the WHITE BAL switch is set to PRST, the automatic white balance adjustment function does not operate.

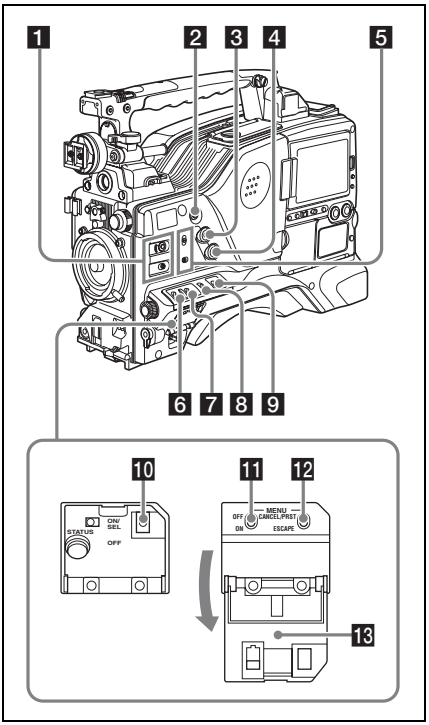
BLK: Adjusts the black set and black balance automatically.

7 MIC (microphone) LEVEL control

Adjusts the input level of audio channels 1, 2, 3 and 4.

For details, see "Adjusting the Audio Level" (page 64).

Right side (near the front)



1 ASSIGN (assignable) 1/2 switches

You can assign the desired functions to these switches on the ASSIGNABLE SW page of the OPERATION menu.

Nothing is assigned to these switches when the camcorder is shipped from the factory (equivalent to a selection of OFF in the menu).

For details, see "Assigning functions to ASSIGN switches" (page 208).

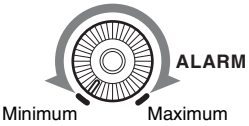
2 ASSIGN (assignable) 5 switch

You can assign the desired functions to these switches on the ASSIGNABLE SW page of the OPERATION menu.
Nothing is assigned to these switches when the camcorder is shipped from the factory (equivalent to a selection of OFF in the menu).

For details, see "Assigning functions to ASSIGN switches" (page 208).

3 ALARM (alarm tone volume adjustment) knob

Controls the volume of the warning tone that is output via the built-in speaker or optional earphones. When the knob is turned to the minimum position, no sound can be heard. However, if the MIN ALARM VOL item on the AUDIO-1 page of the MAINTENANCE menu is set to SET, the alarm tone is audible even when this volume control is at the minimum position.



4 MONITOR (monitor volume adjustment) knob

Controls the volume of the sound other than the warning tone that is output via the built-in speaker or optional earphones. When the knob is turned to the minimum position, no sound can be heard.

5 MONITOR (audio monitor selection) switches

By means of combinations of the two switches, you can select audio that you want to hear through the built-in speaker or optional earphones.

Position of down-side switch: CH-1/2

Position of up-side switch	Audio output
CH-1/CH-3	Channel 1 audio
MIX	Channels 1 and 2 mixed audio (stereo) [a]
CH-2/CH-4	Channel 2 audio

Position of down-side switch: CH-3/4

Position of up-side switch	Audio output
CH-1/CH-3	Channel 3 audio
MIX	Channels 3 and 4 mixed audio (stereo) [a]
CH-2/CH-4	Channel 4 audio

a) By connecting stereo headphones to the EARPHONE jack on the rear of the unit, you can hear the audio in stereo. (On the AUDIO-1 page of the MAINTENANCE menu, HEADPHONE OUT must be set to STEREO.)

6 VDR SAVE/STBY (VDR save/standby) switch

Switches the status of the power supply to the VDR while recording is stopped (STOP) or paused (REC PAUSE).

SAVE: The disc stops rotating and some functions are disabled. Power consumption is lower than when the camcorder is in STBY mode. Battery life is extended.

STBY: Recording to the disc starts immediately when the REC START button is pressed.

Note

An internal operating sound may be recorded at the start of recording when the VDR SAVE/STBY switch is set to SAVE.

7 GAIN selector

Switches the gain of the video amplifier to match the lighting conditions during shooting. The gains corresponding to the L, M, and H settings can be selected in the menu. (The factory settings are L=0 dB, M=6 dB, and H=12 dB.)
When this switch is adjusted, the new setting appears on the setting change/adjustment progress message display area of the viewfinder screen for about three seconds.

For details, see "Setting gain values for the GAIN selector positions" (page 207).

8 OUTPUT/DCC (output signal/dynamic contrast control) switch

Switches the video signal, which is output to the video disc drive (referred to as "VDR"), viewfinder, and video monitor from the camera section, between the following two.

BARS: Outputs the color bar signal.

CAM: Outputs the video signal from the camera. When this is selected, you can switch DCC [1] on and off.

1) **DCC (Dynamic Contrast Control):** Against a very bright background with the iris opening adjusted to the subject, objects in the background will be lost in the glare. The DCC function will suppress the high intensity and restore much of the lost detail and is particularly effective in the following cases.
- Shooting people in the shade on a sunny day
- Shooting a subject indoors, against a background through a window
- Any high contrast scene

9 WHITE BAL (white balance memory) switch

Controls adjustment of the white balance.

PRST: Adjusts the color temperature to the preset value (the factory default setting: 3200K). Use this setting when you have no time to adjust the white balance.

A or B: Recall the white balance adjustment settings already stored in A or B. Flick the AUTO W/B BAL switch *(see page 15)* on the WHT side, to automatically adjust the white balance, and save the adjustment settings in memory A or memory B.
However, the white balance does not function while ATW [1] is operating, even if the AUTO W/B BAL switch is set to the WHT position.

B (ATW): When this switch is set to B and WHITE SWITCH <B> is set to ATW on the WHITE SETTING page of the OPERATION menu, ATW is activated.

When this switch is adjusted, the new setting appears on the setting change/adjustment progress message display area of the viewfinder screen for about three seconds.

1) **ATW (Auto Tracing White Balance):** The white balance of the picture being shot is adjusted automatically for varying lighting conditions.

10 STATUS ON/SEL/OFF (menu display on/page selection/display off) switch

To enable this switch, set the MENU ON/OFF switch to OFF.
Closing the cover automatically sets the MENU ON/OFF switch to OFF.

ON/SEL: Each time this switch is pushed upward, a window to confirm the menu settings and status of the camcorder appears on the viewfinder screen. The window consists of four pages, which are switched each time the switch is pushed upward. Each page is displayed for about 10 seconds.

OFF: To clear the page immediately after display, push this switch down to the OFF position.

You can select the pages to be displayed on the menu.

For details, see "Displaying the status confirmation screens" (page 206).

11 MENU ON/OFF switch

To use this switch, open the cover.
This switch is used to display the menu on the viewfinder screen or the test signal screen.
Closing the cover automatically sets this switch to OFF.

ON: Displays the menu on the viewfinder screen or the test signal screen.

OFF: Removes the menu from the viewfinder screen or the test signal screen.

12 CANCEL/PRST (preset)/ESCAPE switch

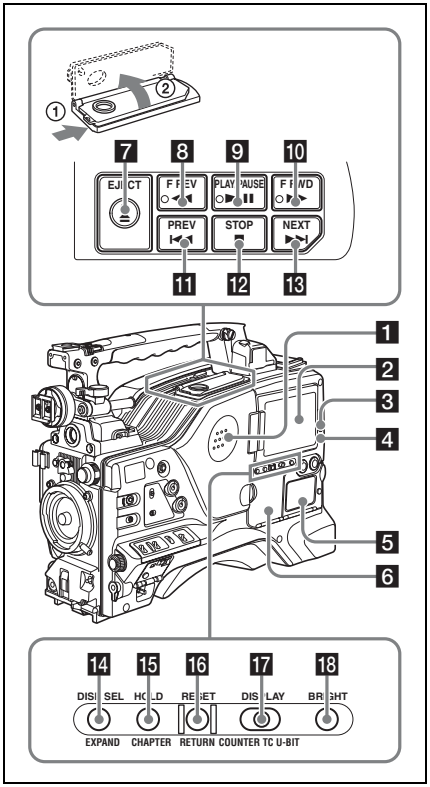
To enable this switch, set the MENU ON/OFF switch to ON.
Closing the cover automatically sets the MENU ON/OFF switch to OFF.

CANCEL/PRST: Flicking this switch up to this position displays the message to confirm whether the previous settings are cancelled or settings are reset to their initial values, depending on the menu operating condition. Flicking this switch up to this position again cancels the previous settings or resets the settings to their initial values.

ESCAPE: Use this switch when the menu page, which has a hierarchical structure, is opened. Each time the switch is flicked to this position, the page returns to one stage higher in the hierarchy.

13 Cover

Right side (near the rear)



1 Built-in speaker

The speaker can be used to monitor E-E sound during recording, and playback sound during playback. The speaker also sounds alarms to reinforce visual warnings.
If you connect earphones to the EARPHONE jack, the speaker output is suppressed automatically.

For details about alarms, see "Operation Warnings" (page 244).

2 LCD monitor

Displays camera video, VDR-related warnings, remaining battery capacity, remaining disc capacity, audio levels, time data, and so on.

For details, see "Status display on the LCD monitor" (page 20).

3 WARNING indicator

Lights up or flashes when an abnormality occurs in the VDR section.

For details about the meaning of the states of the WARNING indicator, see "Operation Warnings" (page 244).

4 ACCESS indicator

This lights when data is written to or read from the disc.

5 Protection cover of the audio control section

Open to access the audio control section *(see page 23)*.

6 Protection cover of the GUI screen operations section

Open to access the GUI screen operations section *(see page 23)*.

7 EJECT button and indicator

Press this button to insert a disc or eject the disc. The indicator flashes while the disc is being ejected.

8 F REV (fast reverse) button and indicator

This plays back at high speed in the reverse direction. The indicator lights during high-speed playback in the reverse direction.

9 PLAY/PAUSE button and indicator

Press this button to view play back video images using the viewfinder screen or the LCD monitor. The indicator lights during playback.
Press this button again during playback to pause, outputting a still image. At this time the indicator flashes.
To play back at approximately four times normal playback speed, press the F REV button or F FWD button during playback.
At this time the PLAY indicator and F REV or F FWD indicator light.

10 F FWD (fast forward) button and indicator

This plays back at high speed in the forward direction. The indicator lights during high-speed playback in the forward direction.

11 PREV button

This jumps to the first frame of the current clip. During the jump, the F REV indicator flashes. If you press this together with the F REV button, the jump is to the first frame of the first recorded clip on the disc.

12 STOP button

Press this button to stop disc playback.

13 NEXT button

This jumps to the first frame of the next clip. During the jump, the F FWD indicator flashes. If you press this together with the F FWD button, the jump is to the last frame of the last recorded clip on the disc.

14 DISP SEL (display selection) /EXPAND (expand function) button

With each press of this button, the display in the LCD monitor changes as follows.

Display indication	Meaning
Video with superimposed information (CHAR)	The LCD monitor displays the same text information as the viewfinder.
Video without superimposed information (MONI)	The video only appears.
Status display (STATUS)	Counter indications, warnings, audio levels, and similar information appear. No video image appears.

If you press this button when the thumbnail screen is displayed, the duration of the selected clip is divided into 12, and the first frame of each of the divisions is shown in a further thumbnail display (expand function). Each time you press this button, the division is repeated (to a maximum of three times, with 1,728 divisions). Hold down the SHIFT button and press this button to step back through the division process.

For details of the expand function, see page 114.

15 HOLD (display hold)/CHAPTER (chapter function) button

Pressing this button instantly freezes the time data displayed in the counter display section. (The timecode generator continues running.) Pressing this button again releases the hold.
You can use this button, for example, to determine the exact time of a particular shot.

For details of the counter display, see page 21.

If you press this button when the clip thumbnail screen is displayed, those frames on which shot marks are recorded appear in a list (chapter function). Press the button once more to return to the normal thumbnail display.
By displaying thumbnails with shot marks attached in place of index frames, you can check the contents of clips more easily and more quickly. This is also useful for cueing up long clips.

For details of the chapter function, see page 115

16 RESET/RETURN button

Resets the value shown in the time counter display. According to the settings of the PRESET/REGEN/CLOCK switch *(see page 23)* and the F-RUN/SET/R-RUN switch *(see page 23)*, this button resets the display as follows.

Settings of switches	To reset
DISPLAY switch: COUNTER	Counter to 0:00:00:00
DISPLAY switch: TC **PRESET/REGEN/ CLOCK switch:** PRESET **F-RUN/SET/R-RUN switch:** SET	Timecode to 00:00:00:00
DISPLAY switch: U-BIT **PRESET/REGEN/ CLOCK switch:** PRESET **F-RUN/SET/R-RUN switch:** SET	User bits [a] data to 00 00 00 00

a) Of the timecode bits for every frame recorded on the disc, those bits which can be used to record useful information for the user such as scene number, shooting place, etc.

For details, see "Setting Time Data" (page 67).

This button returns to the previous screen when pressed during thumbnail display.

For details, see "GUI screen operations" (page 112).

17 DISPLAY switch

This cycles the data displayed in the counter display through the sequence COUNTER, TC, and U-BIT.

COUNTER: Display the elapsed recording/playback time (hours, minutes, seconds, frames).
TC: Display timecode.
U-BIT: Display user bit data.

For details, see "Status display on the LCD monitor" (page 20).

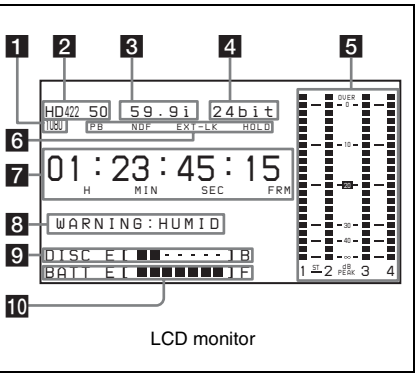
18 BRIGHT (brightness) button

Switches the brightness of the LCD monitor backlight.
Each press of the button selects the next setting in the order shown in the following table.

Setting	LCD monitor backlight
H	High (select this to view the LCD monitor outdoors in the daytime)
M	Brightness between H and L
L	Low (select this to view the LCD monitor indoors or outdoors at night)
OFF	Off (the display is also off)

Status display on the LCD monitor

The following display appears on the LCD monitor display which is set to STATUS with the DISP SEL/EXPAND button.



LCD monitor

1 Resolution

Indicates the resolution of HD output video.

Indication	Resolution (horizontal × vertical)
1080	1080 lines (1920 × 1080)
720	720 lines (1280 × 720)

2 Video format

Indicates the format of video being currently played back or recorded.

Indication	Format	Bit rate
HD422 50	MPEG HD422	50 Mbps
HD420 HQ/SP/LP [a)]	MPEG HD420	35/25/18 Mbps
IMX 50/40/30	MPEG IMX	50/40/30 Mbps
DVCAM	DVCAM	25 Mbps

a) LP is playback only.

3 System frequency

Indicates the system frequency of video being currently played back or recorded.

If NTSC AREA is selected [1)]

Indication	Field or frame rate	Scan mode
59.9i	59.94 fields per second	Interlace
59.9P	59.94 frames per second	Progressive
29.9P	29.97 frames per second	Progressive
23.9P	23.98 frames per second	Progressive

If PAL AREA is selected [1)]

Indication	Field or frame rate	Scan mode
50i	50 fields per second	Interlace
50P	50 frames per second	Progressive
25P	25 frames per second	Progressive

1) Selected by COUNTRY setting on the FORMAT page of the OPERATION menu *(see page 157)*.

Note

There may be no indication displayed when this unit cannot identify the system frequency, for example, when playing back a disc recorded with other equipment.

4 Audio format

Indicates the format of audio being currently played back or recorded.

Indication	Quantization bit rate/sampling frequency
24bit	24 bits/48 kHz

Indication	Quantization bit rate/sampling frequency
16bit	16 bits/48 kHz

5 Audio level indicators

Indicates the audio recording or playback levels of channels 1 to 4.

6 Status display

PB: Appears during playback.

NDF: Appears when non-drop-frame timecode is selected.

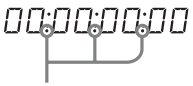
EXT-LK: Appears when the internal timecode generator is locked to an external signal input to the TC IN (timecode input) connector.

HOLD: Appears when the internal timecode generator is stopped.

7 Time counter display

Switches displays of time counter, timecode, and user bits, depending on the position of the DISPLAY switch.

When the HOLD/CHAPTER button is pressed to hold the timecode value, the timecode is displayed in the format shown below. When the HOLD/CHAPTER button is pressed again to release the hold, the timecode is displayed in the normal format.



Lights when the HOLD/CHAPTER button is pressed.

8 Warning indicator area

Displays warnings when trouble with recording or moisture condensation occurs.

For details, see "Operation Warnings" (page 244).

Also, when it is possible to set clip names by using planning metadata *(see page 94)*, displays as clip information the title contained in the planning metadata that has been loaded into this unit. (The display format follows the setting of Planning Clip Name in Clip Info. Area in the Disc Menu.)

The following characters can be displayed.

- Digits: 0 to 9
- Alphabetic characters: a to z, A to Z
- The following symbols: !, ", #, $, %, &, ', (,), *, +, , (comma), -, . (period), /, : (colon), ; (semicolon), <, =, >, ?, @, [,], ^, _, {, |, }, ~
- Space

9 Remaining disc capacity indicator

Indication	Remaining recording time
DISC E [■ ■ ■ ■ ■ ■ ■] B	More than 30 minutes
DISC E [■ ■ ■ ■ ■ ■] B	25 to 30 minutes
DISC E [■ ■ ■ ■ ■] B	20 to 25 minutes
DISC E [■ ■ ■ ■] B	15 to 20 minutes
DISC E [■ ■ ■] B	10 to 15 minutes
DISC E [■ ■] B	5 to 10 minutes
DISC E [■] B	2 to 5 minutes
DISC E [■] B (flashing)	0 to 2 minutes
DISC E [ ] B (flashing)	0 minutes

10 Remaining battery capacity indicator

Indication	Battery voltage	
	BP-L60S/L80S	Other batteries [a]
BATT E [■ ■ ■ ■ ■ ■ ■] F	15.5 V or more	17.0 V or more
BATT E [■ ■ ■ ■ ■ ■] F	15.1 to 15.5 V	16.0 to 17.0 V
BATT E [■ ■ ■ ■ ■] F	14.6 to 15.1 V	15.0 to 16.0 V
BATT E [■ ■ ■ ■] F	13.8 to 14.6 V	14.0 to 15.0 V
BATT E [■ ■ ■] F	12.9 to 13.8 V	13.0 to 14.0 V
BATT E [■ ■] F	12.0 to 12.9 V	12.0 to 13.0 V
BATT E [■] F	10.8 to 12.0 V	11.0 to 12.0 V
BATT E [ ] F	10.8 V or less	11.0 V or less

a) You can change the threshold voltages on the BATTERY 2 page of the MAINTENANCE menu *(see page 170)*.

Note

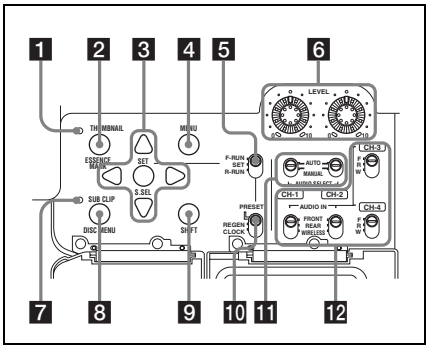
For safety and to ensure proper operation, use of the BP-FLX75 battery pack is recommended.

Indication	Battery voltage
	BP-GL95A/GL65A/FLX75, Anton Bauer Battery System
BATT E [■ ■ ■ ■ ■ ■ ■] F	80 to 100%
BATT E [■ ■ ■ ■ ■ ■ ■]	70%
BATT E [■ ■ ■ ■ ■ ■]	60%
BATT E [■ ■ ■ ■ ■]	50%
BATT E [■ ■ ■ ■]	40%
BATT E [■ ■ ■]	30%
BATT E [■ ■]	20%
BATT E [■]	10%
BATT E [ ]	0%

Note

For safety and to ensure proper operation, use of the BP-FLX75 battery pack is recommended.

GUI screen operations section and audio control section



1 THUMBNAIL indicator

This lights when thumbnails are displayed.

2 THUMBNAIL/ESSENCE MARK button

Press this button to carry out a thumbnail search or create a clip list *(see page 114)*.
When pressed, the whole-screen display changes to a thumbnail display. Press once more to return to the whole-screen display.
For a thumbnail search using essence marks, hold down the SHIFT button and press this button *(see page 115)*.

3 SET/S.SEL (set/scene selection) button and arrow buttons

Use these buttons to make timecode and user bit settings, and for GUI screen operations.
The arrow buttons select items and change values, and the SET/S.SEL button confirms settings.
Pressing this button with thumbnails displayed and the SHIFT button held down adds a sub clip to the current clip list (scene selection).

See page 112 for more information about GUI screen operations.

See page 124 for more information about scene selection.

4 MENU button

Displays a special menu for operations in GUI screens *(see page 108)*.
When the whole-screen is displayed, pressing this button has no effect, and the operation is invalid.

5 F-RUN/SET/R-RUN (free run/set/ recording run) switch

Selects the operating mode of the internal timecode generator. The operating mode is set as explained below, depending on the position of the switch.

F-RUN: Timecode keeps advancing, regardless of the operating state of the VDR. Use this setting when synchronizing the timecode with an external timecode.

SET: Sets the timecode or user bits.

R-RUN: Timecode advances only during recording. Use this setting to have a consecutive timecode on the disc.

For details, see "Setting the timecode" (page 67) and "Setting the user bits" (page 67).

6 LEVEL CH-1/CH-2 (audio channel 1/2 recording level) knobs

Adjusts the audio levels to be recorded on channels 1 and 2 when the AUDIO SELECT CH-1/CH-2 switches are set to MANUAL.

7 SUB CLIP indicator

This lights when using a clip list for playback.

8 SUB CLIP/DISC MENU button

Press this to play back according to a clip list. You can play back a particular clip or sequential clips, or carry out a search of the selected clip list.
To display the Disc Menu which allows you to carry out operations such as saving, recalling, or deleting a clip list, hold down the SHIFT button and press this button.

9 SHIFT button

Use this in combination with other buttons.

10 PRESET/REGEN (regeneration)/ CLOCK switch

Selects whether to set a new timecode or to utilize the existing timecode.

PRESET: Records a new timecode.

REGEN: Records timecode continuous with the existing timecode recorded on the disc. Accordingly, some extra time is required, compared to PRESET/CLOCK, if recording is started immediately after the power is turned on. Regardless of the setting of the F-RUN/SET/R-RUN switch, the camcorder operates in R-RUN mode.

CLOCK: Records timecode synchronized to the internal clock. Regardless of the setting of the F-RUN/SET/R-RUN switch, the camcorder operates in F-RUN mode.

11 AUDIO SELECT CH-1/CH-2 (audio channel 1/2 adjustment method selection) switches

Select the audio level adjustment method for each of audio channels 1 and 2.
AUTO: Automatic adjustment
MANUAL: Manual adjustment

12 AUDIO IN CH-1/CH-2/CH-3/CH-4 (audio channel 1/2/3/4 input selection) switches

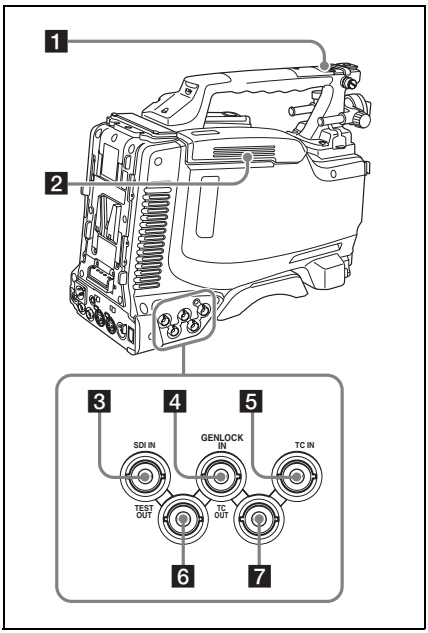
AUDIO IN CH-1/CH-2 switches

Select the audio input signals to be recorded on audio channels 1 and 2.
FRONT: Audio input signals from the microphone connected to the MIC IN connector
REAR: Audio input signals from an audio device connected to the AUDIO IN CH1/CH2 connectors
WIRELESS: Audio input signals from the UHF portable tuner (not supplied) if it is installed

AUDIO IN CH-3/CH-4 switches

Select the audio input signals to be recorded on audio channels 3 and 4.
F (FRONT): Audio input signals from a microphone connected to the MIC IN connector
R (REAR): Audio input signals from an audio device connected to the AUDIO IN CH1/CH2 connectors
W (WIRELESS): Audio input signals from the UHF portable tuner (not supplied) if it is installed

Left side and upper section



1 ASSIGNABLE 3/4 switches

You can assign the desired functions to these switches on the ASSIGNABLE SW page of the OPERATION menu.
Nothing is assigned to these switches when the camcorder is shipped from the factory (equivalent to a selection of OFF in the menu).

For details, see "Assigning functions to ASSIGN switches" (page 208).

2 Lid of the disc compartment

This opens when the EJECT button on the top panel is pressed. Press the side of the lid to close.

3 SDI IN connector (BNC type)

The unit can record HD-SDI or SD-SDI signals that are input to this connector. Input the return video signal.
Setting RETURN VIDEO to ON on the ASSIGNABLE SW page of the OPERATION menu allows you to display the HD-SDI signal input on the SDI IN connector in the viewfinder while the RET button is pressed.

4 GENLOCK IN (genlock signal input) connector (BNC type)

- This connector inputs a reference signal when the camera is to be genlocked or when timecode is to be synchronized with external equipment. Use the GENLOCK page of the MAINTENANCE menu to adjust the genlock H-phase (phase of horizontal sync signal). Available reference signals vary depending on the current system frequency as shown in the following table.

System frequency	Available reference signals
1080/59.94i	1080/59.94i, 525/59.94i
1080/50i	1080/50i, 625/50i
1080/29.97P	1080/59.94i, 525/59.94i
1080/25P	1080/50i, 625/50i
1080/23.98P	1080/23.98PsF
720/59.94P	1080/59.94i, 525/59.94i
720/50P	1080/50i, 625/50i

- This connector also inputs a return video signal. You can display the HD-Y (1080i) signal in the viewfinder screen while holding the RET button down with RETURN VIDEO set to ON on the ASSIGNABLE SW page of the OPERATION menu.
- Input an external video signal. The unit can record analog composite video signals that are input to this connector.

5 TC IN (timecode input) connector (BNC type)

To apply an external lock to the timecode of this unit, input the reference timecode.

For details of timecode, see "Setting the timecode" (page 67).

6 TEST OUT connector (BNC type)

This connector outputs the video signal for a video monitor. The output signal can be selected from composite video, HD-Y, and R, G, B. To switch output signals, use the TEST OUT SELECT item on the OUTPUT 1 page of the OPERATION menu.

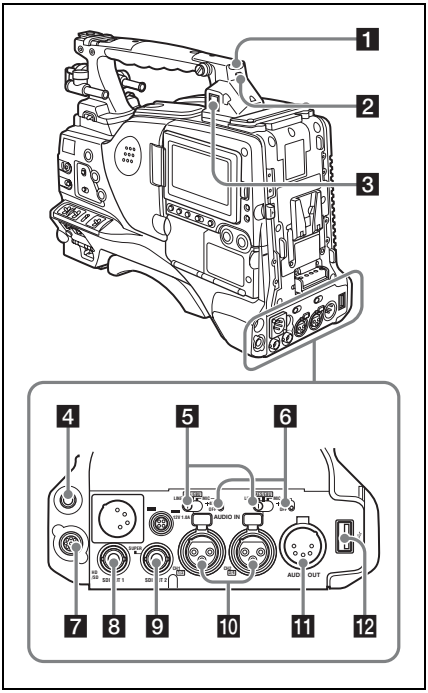
If the output signal is set to one of R, G, or B, then this setting changes to HD-Y when the camcorder is powered off and on again.

Depending on menu settings, menus, timecode, and shot data can be superimposed on the image on the monitor. This connector can also be used to synchronize the timecode of an external VTR with the timecode of the camcorder.

7 TC OUT (timecode output) connector (BNC type)

To lock the timecode of an external VTR to the timecode of this unit, connect this connector to the external VTR's timecode input connector.

Rear



1 TALLY (back tally) indicator (red)

Lights up during recording. It will not light if the TALLY switch is set to OFF. This indicator also flashes to indicate warnings *(see page 18)* in the same manner as the REC/TALLY indicator in the viewfinder.

For details, see "Operation Warnings" (page 244).

2 TALLY switch

Set to ON to activate the TALLY indicator function.

3 (network) connector (RJ-45 type)

This is a 10BASE-T/100BASE-TX connector for network connection.

Before using this connector, you must set ETHERNET/USB on the POWER SAVE page of the OPERATION menu to "ENABL" *(see page 211)*.

CAUTION

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.
- When you connect the network cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.

4 EARPHONE jack (stereo, minijack)

You can monitor the E-E sound during recording and playback sound during playback. When an alarm is indicated, you can hear the alarm sound through the earphone. You can use this with the EARPHONE jack on the front of the unit at the same time. Plugging an earphone into the jack automatically cuts off the built-in speaker.
You can select monaural or stereo on the AUDIO-1 page of the MAINTENANCE menu.

5 LINE / AES/EBU / MIC selectors

These select the audio source of the audio input signals input to the AUDIO IN CH1/CH2 connectors.
LINE: Line input audio equipment
AES/EBU: AES/EBU format audio signal
MIC: Microphone input

Note

When these switches are in the MIC position, and the +48V/OFF switch is set to +48V, if you inadvertently connect any audio device other than a microphone to the AUDIO IN CH1/CH2 connectors, the device may be damaged.

6 +48V/OFF switches

Select either of the following positions for the microphones to be connected.
+48V: For a microphone to use an external power supply
OFF: For a microphone to use an internal power supply

7 REMOTE connector (8-pin)

Connect an RM-B170 remote control unit, which makes it possible to control the camcorder remotely.

Note

Before connecting/disconnecting the Remote Control Unit to/from the camcorder, be sure to turn off the camcorder POWER switch.

8 SDI OUT 1 connector (BNC type)

Outputs an HDSDI or SDSDI signal (with embedded audio). To switch between HDSDI and SDSDI signal output, use the SDI OUT 1 SELECT item on the OUTPUT 1 page of the OPERATION menu.

9 SDI OUT 2 connector (BNC type)

Outputs an HDSDI or SDSDI signal (with embedded audio). To switch between HDSDI, SDSDI and VF signal output, use the SDI OUT 2 SELECT item on the OUTPUT 1 page of the OPERATION menu.
Setting menus, timecode, or shot data can be superimposed on the camera output video depending on the menu settings, and you can view them on the monitor screen.

10 AUDIO IN CH1/CH2 (audio channel-1 and channel-2 input) connectors (XLR type, 3-pin, female)

These are audio input connectors for channels 1 and 2 to which you can connect audio equipment or a microphone.
When the LINE / AES/EBU / MIC selector is set to AES/EBU, the CH1 connector is used for channel-1 and -2 inputs, and the CH2 connector, for channel-3 and -4 inputs.

11 AUDIO OUT connector (XLR type, 5-pin, male)

Outputs the audio signals recorded on audio channels 1 and 2 or audio channels 3 and 4. The audio signals are selected by the MONITOR switch.

12 (USB) connector

This is a USB 2.0 connector.
Connect one of the following devices, depending on what you want to do.

Device	Enables
Windows USB keyboard or mouse	Text input wth the on-screen software keyboard *(see page 120)*

Device	Enables
USB flash drive	Recording of proxy data *(see page 98)*
	Loading of planning metadata *(see page 132)* Saving and loading user setting data *(see page 219)*
Optional CBK-WA01 Wi-Fi Adaptor	Making wireless LAN connections *(see page 212)*
Optional CBK-WA100 Wireless Adaptor	CBK-WA100 status indicator Wireless LAN connection

Before using this connector, you must set ETHERNET/USB on the POWER SAVE page of the OPERATION menu to “ENABL” *(see page 211)*.

Status display on the viewfinder screen

Layout of the status display on the viewfinder screen

The viewfinder screen displays not only the video picture but also characters and messages indicating the camcorder settings and operating status, a center marker, a safety zone marker, etc. When the menu screen is not displayed and the DISPLAY of the DISPLAY/ASPECT switch is set to on, the items for which an ON setting was made on the VF DISP 1, VF DISP 2, or VF DISP 3 page of the OPERATION menu or with related switches are displayed at the top and bottom of the screen.
The messages that give details of the settings and adjustment progress and results can also be made to appear for about three seconds while settings are being changed, during adjustment, and after adjustment.

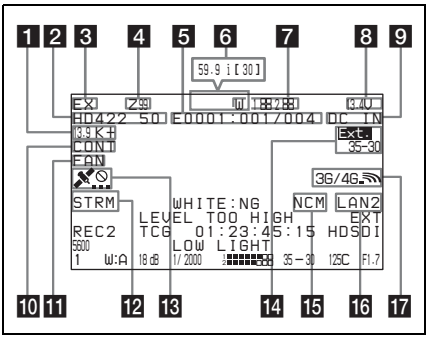
For details about the display item selection, see “Selecting the display items” (page 200).

For details about setting change and adjustment progress messages, see “Change confirmation/ adjustment progress messages” (page 202).

For details about marker display, see “Setting the marker display” (page 202).

All items that can be displayed on the viewfinder screen are shown below.

Top of viewfinder screen



1 Color temperature

Displays a color temperature calculated from the gain of R and B, in the range 0.0 K to 99.9 K (in steps of 0.1 K). The +/– signs may be displayed depending on the OFFSET WHT setting *(see page 216)*.
No display: OFFSET WHT is OFF
+: The value of OFFSET WHT is greater than 3200K.
–: The value of OFFSET WHT is less than 3200K.

2 Video format

Indicates the format of video being currently played back or recorded *(see page 51)*.
The video aspect ratio (16:9 or 4:3) can also be displayed when the recording format is set to IMX 50, IMX 40, IMX 30, or DVCAM.

3 Extender

Displays the extender settings of this unit and the lens.
EX: The lens extender is on.
08: The lens shrinker is on.
x2D: The unit’s digital extender is x2.
Ex2D: The lens extender is on, and the unit’s digital extender is x2.
x3D: The unit’s digital extender is x3.
Ex3D: The lens extender is on, and the unit’s digital extender is x3.
x4D: The unit’s digital extender is x4.
Ex4D: The lens extender is on, and the unit’s digital extender is x4.

4 Zoom position

Indicates the zoom position of the zoom lens in the range from 0 to 99.

5 Clip information

During shooting, displays information about the clip being recorded or the clip to be recorded next. During playback, displays information about the playback clip.

The information that appears depends on the setting of DISP CLIP NAME on the VF DISP 3 page of the OPERATION menu. You can also set DISP CLIP NO(PB) on the VF DISP 2 page of the OPERATION menu to "ON" to display the clip number and total number of clips during playback.

When DISP CLIP NAME is set to "PLAN":
During shooting, when Planning Clip Name Display in the Disc Menu is set to "Enable", this area displays the title specified in the currently loaded planning metadata. (The display format follows the setting of "Planning Clip Name in Clip Info. Area" in the Disc Menu.)

When DISP CLIP NAME is set to "AUTO":
During shooting, this area displays one of the following, depending on the setting of AUTO NAMING on the FILE NAMING page of the OPERATION menu.
- "C****" or "TITLE": The clip name (standard name, user-specified name, or title) specified by "Display Title" in the Disc Menu
- "PLAN": During shooting, when Planning Clip Name Display in the Disc Menu is set to "Enable", the title specified in the currently loaded planning metadata. (The display format follows the setting of "Planning Clip Name in Clip Info. Area" in the Disc Menu.)

During playback, this area displays the clip name (standard name, user-specified name, or title) specified by "Display Title" in the Disc Menu.

The following characters can be displayed in this area.
- Digits: 0 to 9
- Alphabetic characters: a to z, A to Z
- The following symbols: !, ", #, $, %, &, ', (,), *, +, , (comma), -, . (period), /, : (colon), ; (semicolon), <, =, >, ?, @, [,], ^, _, {, |, }, ~
- Space

6 System frequency and frame rate

During Slow & Quick Motion shooting and playback, displays the system frequency and the frame rate. The frame is rounded to a 2-digit integer and displayed in brackets ([ ]) *(see page 86)*.

This display does not appear during normal shooting and playback.

7 Wireless microphone reception level

When a UHF portable tuner is installed in the camcorder, "W" appears together with four-segment reception level indicators for each of the channels (1 or 2 channels) that can be used by the tuner. The indications are as follows.

Normal use: The number of white segments indicates the strength of the signal level.

Muted: The number of gray segments indicates the strength of the signal level.

Reception level over peak: "P" is displayed instead of the indicators. [1)]

Tuner battery is low: The channel number and indicator of the corresponding channel flash. [1)]

1) DWR-S02DN only

8 Power source voltage/battery remaining capacity

When the unit is powered from a battery pack, indicates the remaining capacity of the power source voltage. When the unit is powered from a battery connected to the DC IN connector or AC adaptor attached to the battery attachment shoe, indicates the power source voltage.

9 External battery

Appears if the power is supplied from an external battery connected to the DC IN connector.

10 Clip Continuous Rec function

Appears when the Clip Continuous Rec function *(see page 88)* is enabled.

CONT (lit): Continuous recording to extend the previous clip is possible.

CONT (flashing): A new clip will be created and recorded.

11 Cooling fan control mode

This appears when FAN CONTROL on the CAM CONFIG 2 page of the MAINTENANCE menu is set to "R.MIN" or "MIN".

FAN (lit): The cooling fan is operating at low speed.

FAN (flashing): The cooling fan is operating at low speed, but the temperature inside the unit has risen to a level just below the level at which an alarm occurs.

Note

If you do nothing while the FAN display is flashing, the unit will attempt to lower the internal temperature by operating the fan at high speed. When the FAN display begins to flash, you should stop shooting and other operations and wait until the internal temperature drops, and then restart operations.

12 Streaming status indicator

Displays the streaming status of the optional CBK-WA100 Wireless Adaptor.
Displayed when the following conditions are satisfied.

- OPERATION menu >VF DISP 4 >STREAMING STATUS is ON
- MAINTENANCE menu >CAM CONFIG 3 >Wi-Fi/ETHER RM is RM or ALL
- Streaming setting of CBK-WA100 is ON [a)]
- Network Client setting of CBK-WA100 is OFF [b)]

a) Set OFF while streaming from the CCM
b) Set ON while streaming from the CCM

Example display

Display indication	Meaning
STRM off	Not streaming
STRM	Video streaming in progress
STRMx	Error

13 GPS reception status

For details, see "Icons displayed on the screen" (page 101).

14 Connection status display area

When a USB flash drive is connected

When a USB flash drive is connected to the enabled USB connector, a memory symbol appears indicating the mount status of the USB flash drive and its remaining capacity.

Indicator display

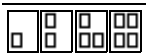
Icon	Remaining capacity display	Description
Ext.	Lit 30-35	Proxy data recording is enabled, and there are 30 to 35 minutes of remaining capacity.
	Lit 5MIN	Proxy data recording is enabled, and there are at least 5 minutes of remaining capacity.
	Flashing 0MIN	Proxy data recording is enabled, but there are less than 5 minutes of remaining capacity. [a)]
	Unlit	Proxy data recording is disabled. [b)]
	Lit INH	The USB flash drive is write protected. [c)]
Ext.!	Not displayed	Recording is not possible. [d)]

a) Use a USB flash drive with enough free capacity remaining.
b) Enable the proxy data recording function.
c) Clear the write protection on the USB flash drive.
d) Format or exchange the USB flash drive.

When connected to Wi-Fi (wireless LAN)

When Wi-Fi on the POWER SAVE page of the OPERATION menu is set to "ENABL", the wireless LAN connection status is displayed.

Indicator display

Icon	Display	Meaning
	Lit	Not connected or connection not identified
	Flashing	Connecting
	Lit	Connected (signal strength: 0)
	Lit	Connected. Signal strength (1 to 4) indicated by the number of white segments displayed (1 to 4).

When connected to optional CBK-WA100 Wireless Adaptor via USB

The remaining media capacity on the CBK-WA100 is displayed if Wi-Fi/ETHER RM is set to “RM” or “ALL” on the CAM CONFIG 3 page of the MAINTENANCE menu.

Indicator display

Icon	Display	Meaning
Ext.	Lit xxMIN	Proxy data recording is enabled, and there are xx minutes of remaining media capacity.
	Lit 0MIN	There is no remaining media capacity.
Ext.	Not displayed	Recording is not possible.

15 Network client mode status indicator

Displays the status of the connection to the CCM (Connection Control Manager of the network RX station) of the optional CBK-WA100 Wireless Adaptor.

Displayed when the following conditions are satisfied.

- OPERATION menu >VF DISP 4 >NW CLIENT MODE is ON
- MAINTENANCE menu >CAM CONFIG 3 >Wi-Fi/ ETHER RM is RM or ALL
- Network Client setting of the CBK-WA100 is ON

Example display

Display indication	Meaning
NCM	CCM connected
NCM (flashing)	Connecting/disconnecting CCM
(No display)	CCM connection standby
NCMx	CCM connection error

16 Wired LAN connection status indicator

Displays the wired LAN network setting/ connection status of the optional CBK-WA100 Wireless Adaptor.

Displayed when the following conditions are satisfied.

- OPERATION menu >VF DISP 4 >WIRELESS STATUS is ON
- MAINTENANCE menu >CAM CONFIG 3 >Wi-Fi/ ETHER RM is RM or ALL

Example display

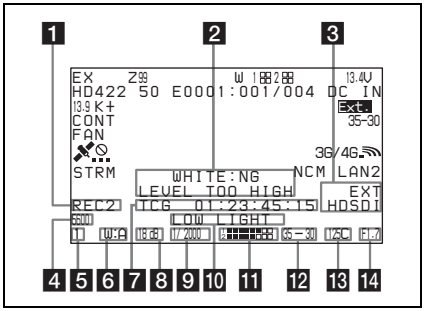
Display indication	Meaning
LAN2	Wired LAN connected
(No display)	Wired LAN not connected

17 Wireless adaptor reception status

Displays the reception status of the optional CBK-WA100.

LTE connections: Displays 3G/4G symbol.
Station mode: Displays 4-bar signal strength.
Access point mode: Displays AP symbol.

Bottom of viewfinder screen



1 External device control and single clip playback

REC2: Appears when HDSDI REMOTE I/F is set to “CHARA” and SDI REC CONTROL is set to “RM” on the CAM CONFIG 1 page of the MAINTENANCE menu, and the camcorder is remotely controlling recording on external devices connected to the SDI OUT 1/2 connectors (HDSDI output).[1)]

REC2 P PARALLEL REC: Appears when HDSDI REMOTE I/F is set to “CHARA” and SDI REC CONTROL is set to “PARA” on the CAM CONFIG 1 page of the MAINTENANCE menu, and the camcorder and external devices connected to the SDI OUT 1/2 connectors (HDSDI output)[1)] are mutually controlling recording.

SNGL: Appears when SINGLE CLIP MODE in the CAM CONFIG 1 page of the MAINTENANCE menu is set to “ON”, and the unit is searching or playing a clip *(see page 77)*.

1) SDI OUT 1 SELECT or SDI OUT 2 SELECT on the OUTPUT 1 page of the OPERATION menu must be set to HDSDI.

2 Setting change and adjustment progress message display area

For details, see "Change confirmation/adjustment progress messages" (page 202).

3 External input status and aberration correction function

EXT HDSDI/SDSDI/VBS: When the REC VIDEO SOURCE item on the SOURCE SEL page of the OPERATION menu has been set to EXT, then "EXT" and the signal type (HDSDI, SDSDI, or VBS) flashes when a valid signal is input to this unit.

For details, see "Recording video from external devices" (page 96).

ALAC: Appears when ALAC in the CAM CONFIG 3 page of the MAINTENANCE menu is set to "AUTO" *(see page 179).*

4 Electric color temperature filter/Scene file number

The electric color temperature filter display appears when the CC 5600K function is set to ON.

When DISP SCENE FILE on the VF DISP 3 page of the OPERATION menu is set to "ON", the number of the currently loaded scene file ("S1" to "S5") appears instead of the filter display.

5 Filter

Indicates the currently selected filter type *(see page 14)*.

The optical CC filter position (A, B, C, or D) appears to the right side of the ND filter display (1 to 4).

6 White balance memory

Indicates the currently selected white balance automatic adjustment memory.

A: Displayed when the WHITE BAL switch is set to A.

B: Displayed when the WHITE BAL switch is set to B.

P: Displayed when the WHITE BAL switch is set to PRST or when the preset button on an RM-B170 has been pushed.

T: Displayed when ATW is being used.

7 Timecode

Indicates the elapsed recording/playback time, timecode, user bits or other information selected by the DISPLAY switch *(see page 19)*.

8 Gain value

Indicates the gain value (in dB) of the video amplifier, as set by the GAIN selector.

9 Shutter speed

Indicates the shutter speed or the shutter mode. However, if the SHUTTER selector *(see page 14)* is set to OFF, nothing is displayed.

For details of the displayed shutter speed, see "Setting the Electronic Shutter" (page 58).

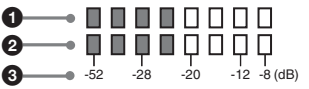
10 Operation/alarm display area and clip transfer status display area

For details, see "Operation/alarm messages" (page 248).

It also displays clip transfer status when an optional CBK-WA100 is connected.

11 Audio level

Indicates the level of audio channel 1 and channel 2. The peak indication of the VDR level meter is related as follows to the audio level.



1 Audio channel 1 level indicator
2 Audio channel 2 level indicator
3 VDR level meter indicator

The segment colors change from gray to white at or above the AU REF LEVEL set on the AUDIO-2 page of the MAINTENANCE menu. This setting does not affect the relationship between the number of lit segments and the audio levels. The example in the above figure shows the colors when AU REF LEVEL is set to –20 dB.

12 Remaining disc capacity

Indicates the remaining recording time (in minutes) of the disc.

Examples of remaining recording time indication

Indication	Remaining recording time
⋮	⋮
110 <	120 to 110 minutes
100 <	110 to 100 minutes
90 <	100 to 90 minutes
90 - 85	90 to 85 minutes
85 - 80	85 to 80 minutes
⋮	⋮
20 - 15	20 to 15 minutes
15 - 10	15 to 10 minutes
10 - 5	10 to 5 minutes
5MIN (flash)	5 minutes
4MIN (flash)	4 minutes
3MIN (flash)	3 minutes
2MIN (flash)	2 minutes
1MIN (flash)	1 minute
0MIN (flash)	0 minutes

Note

During shooting in special modes, such as Interval Rec or Slow & Quick Motion, the indicated remaining disc time may differ from the time which can be actually shot and recorded. This is particularly true when FRAME RATE is set to the maximum value in Slow & Quick Motion shooting, in which case the actual remaining time is about half of the indicated remaining disc time.

13 Remaining clips display

Displays the remaining number of clips that can be recorded. The display flashes once per second when the number of remaining clips is less than 10.

14 Iris setting/auto iris override

Indicates the F value (iris setting) of the lens. Auto iris override is shown by an indicator made up of two segments each on the upper and lower sides.

For details, see "Changing the Reference Value for Automatic Iris Adjustment" (page 62).

Chapter 2 Preparations

Preparing a Power Supply

For safety, use only the Sony battery packs and AC adaptors listed below.
- BP-FLX75 Lithium-ion Battery Pack
- AC power using the AC-DN2B/DN10 AC Adaptor

Using a battery pack

When a BP-L80S/FL75 Battery Pack is used, the camcorder will operate continuously for the time shown below.

Model name	Operating time
BP-FLX75	Approx. 85 minutes

Note

The battery pack operating time depends on the frequency of use of the battery pack, and the ambient temperature when used.

Before use, charge the battery pack with a charger suitable for each battery.

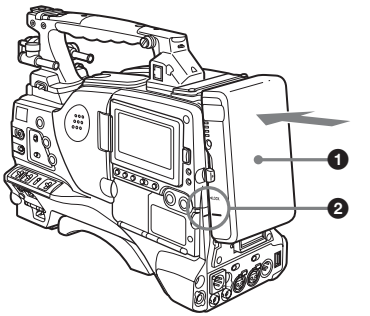
For details on the battery charging procedure, refer to the battery charger operation manual.

Note on using the battery pack

A warm battery pack may not be able to be fully recharged.

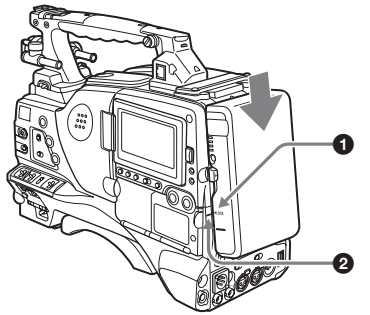
To attach the battery pack

1 Press the battery pack against the back of the camcorder, aligning the line on the side of the battery pack with the matching line on the camcorder.



❶ BP-FLX75
❷ Align these lines.

2 Slide the battery pack down until its "LOCK" arrow points at the matching line on the camcorder.



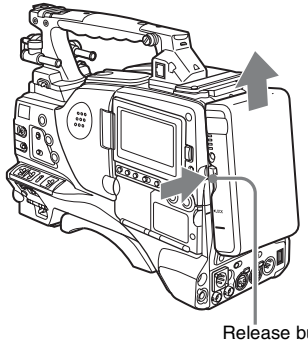
❶ "LOCK" arrow
❷ Matching line on the camcorder

Note

If the battery pack is not attached correctly, the terminal may be damaged.

To detach the battery pack

Holding the release button in, pull the battery pack up.



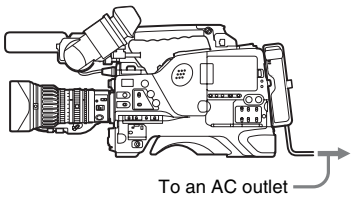
Notes

- During recording and playback (while the ACCESS indicator is lit), be careful never to remove the battery pack.
- Make sure to power the camcorder off before replacing the battery pack.

Using AC power

When using the AC-DN10 AC Adaptor

Mount an AC-DN10 on the camcorder in the same way as a battery pack, then connect to the AC power supply.
The AC-DN10 can supply up to 100 W of power.



Attaching the Viewfinder

Attachment

A viewfinder is available separately.
The following describes an attachment example.

CAUTION

When the viewfinder is attached, do not leave the camcorder with the eyepiece facing the sun. Direct sunlight can enter through the eyepiece, be focused in the viewfinder and cause fire.

For details about attaching a viewfinder, refer to the manual for the viewfinder.

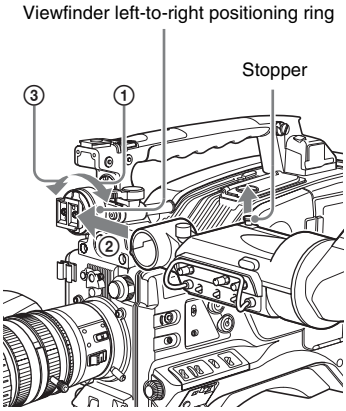
Note

When attaching the viewfinder, make notes of the following points.

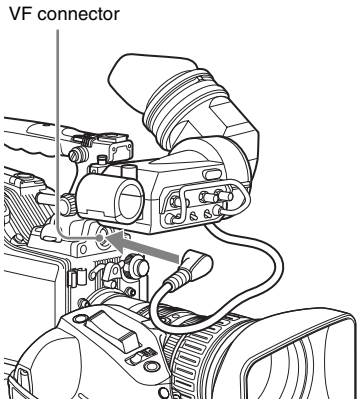
- Be sure to the power off the camcorder before coupling the viewfinder connector to the camcorder's VF connector. If you make this connection when the camcorder power is on, the viewfinder may not function properly.
- Couple the viewfinder connector firmly to the camcorder's VF connector. If the coupling is loose, noise may appear on the video or the tally light may not operate properly.

For more information about the connection of the viewfinder and camcorder, contact a Sony service representative.

1 ① Loosen the viewfinder left-to-right positioning ring, ② attach the viewfinder to the viewfinder fitting shoe, and ③ tighten the viewfinder left-to-right positioning ring.



2 Couple the viewfinder connector to the VF connector.

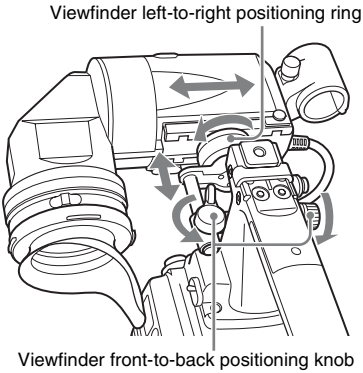


Detaching the viewfinder

You can carry out this by following the attaching procedure in reverse order, but there is an additional action to take: when detaching the viewfinder from the fitting shoe, pull up the stopper.

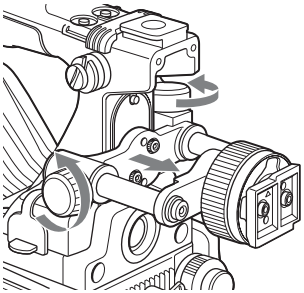
Adjusting the viewfinder position

To adjust the viewfinder left-right position, loosen the left-right positioning ring, and to adjust the front-back position, loosen the front-to-back positioning knob.

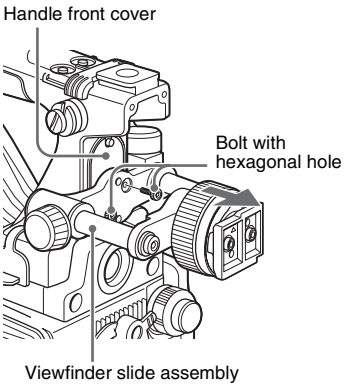


Moving the viewfinder shoe up

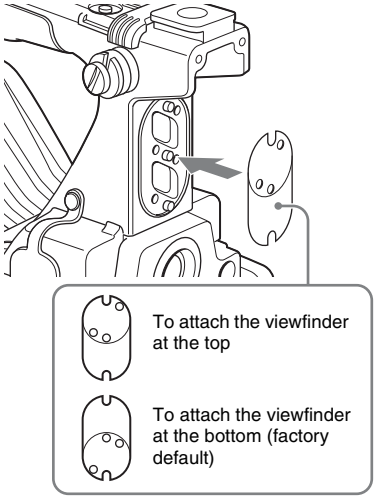
1 Loosen the front-to-back viewfinder positioning levers and the front-to-back viewfinder positioning knobs, and then pull the viewfinder slide assembly forward.



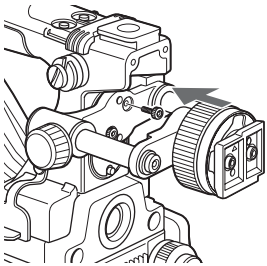
2 Using a 2.5 mm diameter hexagonal wrench, detach the viewfinder slide assembly and handle front cover.



3 Attach the handle front cover with the bottom edge up.

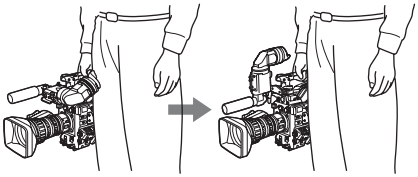


4 Attach the viewfinder slide assembly, reversing the steps of the removal procedure.



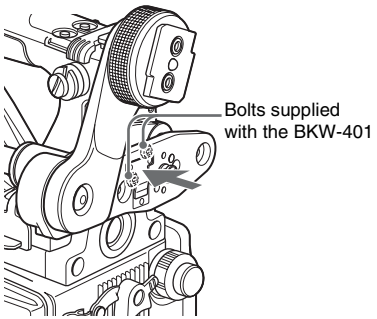
Using the BKW-401 Viewfinder Rotation Bracket

By fitting a BKW-401 Viewfinder Rotation Bracket (not supplied), you can rotate the viewfinder out of the way so that your right leg does not hit the viewfinder while you are carrying the camcorder.

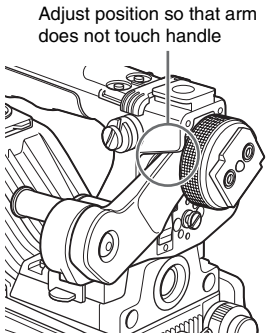


1 Carry out steps 1 and 2 of the previous section "Moving the viewfinder shoe up" to detach the viewfinder slide assembly.

2 Attach the BKW-401 with the supplied bolts.



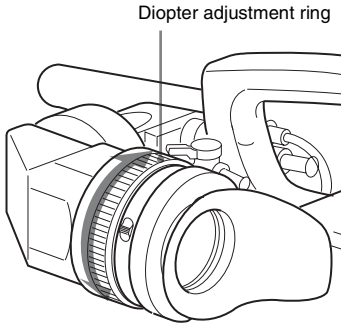
3 Adjust the front-to-back position so that the arm of the BKW-401 does not touch the handle when it is raised.



Adjusting the viewfinder focus and screen

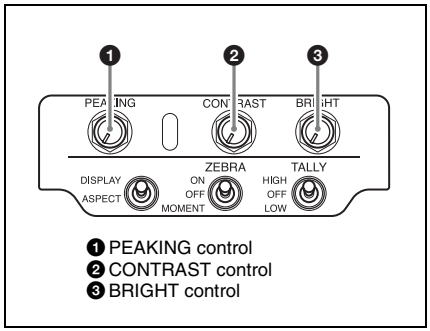
To adjust the viewfinder focus

Turn the diopter adjustment ring until the viewfinder image is sharpest.



To adjust the viewfinder screen

Adjust the brightness, contrast, and peaking of the viewfinder screen with the controls shown below.

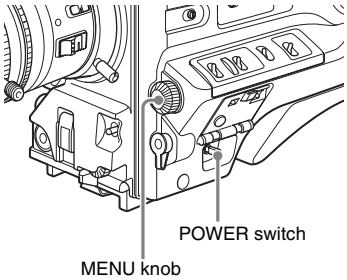


Setting the Area of Use

When using the unit for the first time

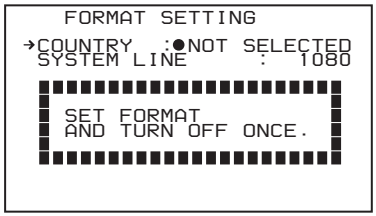
The area of use is not factory preset. Before using this unit, you need to set this item. (You cannot use the unit without setting this item.)

To set the area of use



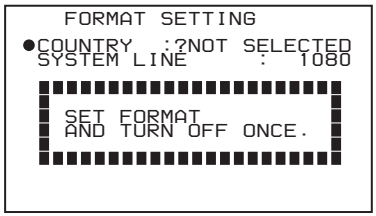
1 Set the POWER switch to the ON position.

The screen for setting the area of use appears in the viewfinder.



2 Press the MENU knob.

● on the left of NOT SELECTED changes to **?**, and you can now select the area of use.



3 Turn the MENU knob to display the desired area of use.

Setting	Area of use
NTSC(J)AREA	NTSC area (Japan) [a]
NTSC AREA	NTSC area (for areas other than Japan) [b]
PAL AREA	PAL area [c]

a) The composite signal output from this unit is an NTSC signal with no black setup. The system frequency is 59.94i.

b) The composite signal output from this unit is an NTSC signal with a black setup (7.5 IRE). The system frequency is 59.94i.

c) The composite signal output from this unit is a PAL signal. The system frequency is 50i.

4 Change the SYSTEM LINE (video resolution) setting as required.

Setting	Resolution (horizontal × vertical)
1080	1080 lines (1920 × 1080)
720	720 lines (1280 × 720)

5 Set the POWER switch to OFF, then once again to ON.

The unit is now ready for use.

Setting the Date/Time of the Internal Clock

You can set or change the date and time of the internal clock. The date and time set are reflected in the timecode.

(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the TIME/DATE page of the DIAGNOSIS menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

```
 D02OTIME/DATE          TOP
➔ADJUST             :▷ EXEC
 GPS ADJUST         :  EXEC

 HOUR               :   12
 MIN                :   55
 SEC                :   58

 YEAR               :   14
 MONTH              :   03
 DAY                :   31
```

2 Press the MENU knob.

The TIME ADJUST setting window appears.

```
      TIME ADJUST       ESC
 HOUR               :   12
 MIN                :   55
 SEC                :   58

 YEAR               :   14
 MONTH              :   03
 DAY                :   31

 OK
```

- HOUR: Sets the hour value.
- MIN: Sets the minutes value.
- SEC: Sets the seconds value.
- YEAR: Sets the year.
- MONTH: Sets the month.
- DAY: Sets the day.

3 Turn the MENU knob to move ➔ to the item you want to set, and press the MENU knob.

➔ on the left of the selected item changes to ● and ● on the left of the setting changes to **?**.

4 Turn the MENU knob to display the desired value, and press the MENU knob.

● changes to ➧ and **?** changes to ●.

5 To continue the remaining settings, repeat steps 3 and 4.

6 When you finish settings, turn the MENU knob to move ➧ to "OK", then press the MENU knob.

The internal clock is set with the date and time set in steps **3** to **5**. The TIME/DATE page of the DIAGNOSIS menu appears again. The time set on the TIME ADJUST setting window is displayed.

To cancel the setting

Before executing step **6**, move ➧ to "ESC" at the top right of the window and press the MENU knob.

Alternatively, flick the CANCEL/PRST/ESCAPE switch down to the ESCAPE side.

All settings or changes are discarded and the TIME/DATE page of the DIAGNOSIS menu appears.

Note

When you set the time, also set TIME ZONE.

Set TIME ZONE on the UMID SET page of the OPERATION menu. For details, see "Setting the UMID data" (page 217).

Setting the Clock to GPS Time

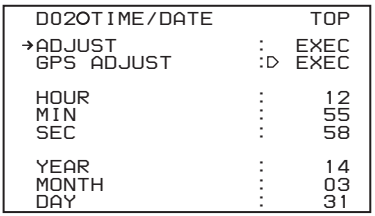
You can set the camcorder clock using clocks on GPS satellites.

Note

The following actions are required on the camcorder in order to use this function.

- GPS must be set to ON on the GPS SETUP page of the OPERATION menu.
- GPS positioning

1 Display the TIME/DATE page in the DIAGNOSIS menu, and turn the MENU knob until the ➧ cursor is pointing to GPS ADJUST.



2 Press the MENU knob.

The "EXECUTE OK?" message appears (the ➧ cursor is pointing to NO, which is flashing).

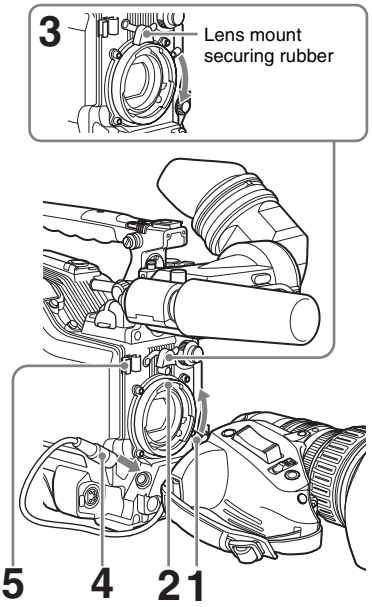
3 Turn the MENU knob to select YES, then press the MENU knob.

The camcorder clock is set to the time using clocks on the GPS satellites.

Mounting the Lens

First power off the camcorder, and then mount the lens using the following procedure.

For information about using the lens, refer to the operation manual for the lens.



1 Push the lens locking lever up and remove the lens mount cap from the lens mount.

2 Align the center pin on the lens with the center slot in the lens mount, and insert the lens into the mount.

3 Holding the lens in place, push the lens locking lever down to lock the lens.

Caution

If the lens is not firmly locked, it may come off while the camcorder is being used. This could cause a serious accident. Make sure the lens is firmly locked. It is recommended that the lens mount securing rubber be put on the lens locking lever as illustrated above.

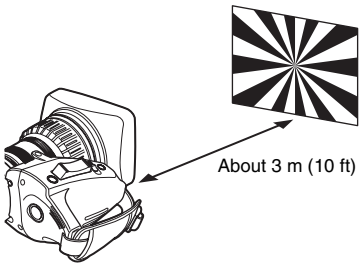
4 Connect the lens cable to the LENS connector.

5 Secure the lens cable with the cable clamps.

Adjusting the Flange Focal Length

If the lens does not stay in focus properly as you zoom from telephoto to wide angle, adjust the flange focal length (the distance from the plane of the lens mounting flange to the imaging plane). Make this adjustment after mounting or changing the lens.

The position of the controls for adjusting the flange focal length vary somewhat from lens to lens. Check the identification of the various controls in the lens manual.



1 **Set the iris to manual.**

2 **Open the iris. Place the flange focal length adjustment chart about 3 m (10 ft) away from the camera, lit well enough to provide a satisfactory video output level.**

3 **Loosen the fixing screws on the F.f or F.B ring (flange focal length adjustment ring).**

4 **Use manual or power zoom to set the lens to telephoto.**

5 **Point the camera at the chart by turning the focus ring and focus on it.**

6 **Set the zoom ring to wide angle.**

7 **Turn the F.f or F.B ring until the chart is in focus, being careful not to disturb the focus ring.**

8 **Repeat steps 4 to 7 until the chart stays in focus all the way from wide angle to telephoto.**

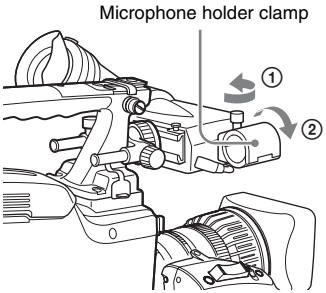
9 **Tighten the F.f or F.B ring fixing screws.**

Preparing the Audio Input System

Connecting a microphone to the MIC IN connector

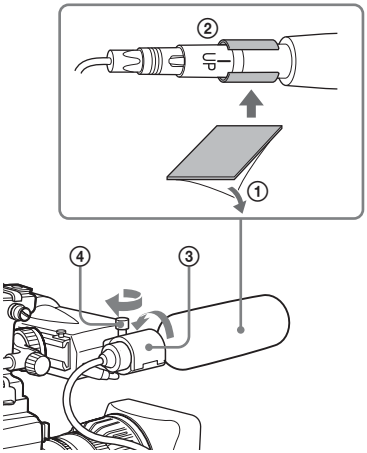
You can attach the ECM-680S stereo microphone (not supplied) to the microphone holder of the HDVF-20A viewfinder (not supplied).

1 Loosen the screw and open the microphone holder clamp.



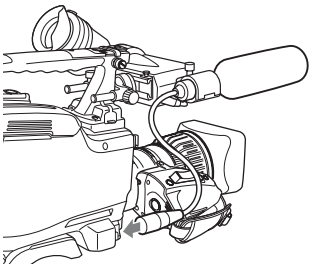
2 Place the microphone in the microphone holder.

① Wind the microphone spacer (sheet type, supplied with this unit and the ECM-680S) around the microphone, while peeling off the protective sheets on both sides of the microphone spacer.
② Place the microphone in the holder so that “UP” is at the top.
③ Close the microphone holder.
④ Tighten the screw.



On how to perform this operation, refer to the operation manual for the microphone.

3 Plug the microphone cable into the MIC IN connector, then set the AUDIO IN switch for the channel on which you want to record the audio from this microphone to FRONT (for CH-1/CH-2) or F (for CH-3/CH-4).



4 Secure the microphone cable with the cable clamps.

Connecting microphones to the AUDIO IN connectors

You can connect up to two monaural microphones to the AUDIO IN CH1/CH2 connectors, using a CAC-12 Microphone Holder (not supplied).

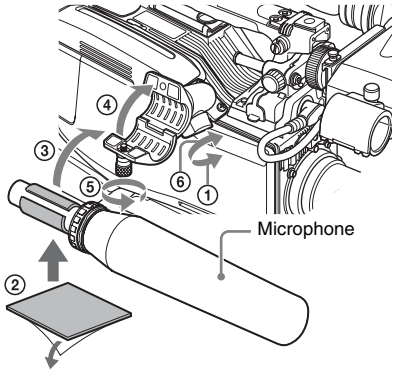
The following is the procedure for attaching an electret condenser microphone such as the ECM-678/673.

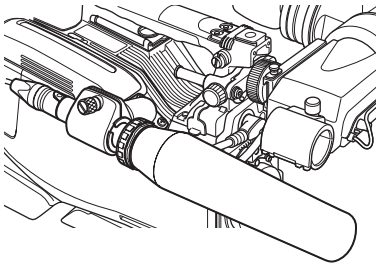
On how to attach the CAC-12, refer to the operation manual for the CAC-12.

1 Attach the electret condenser microphone.

① Loosen the ball joint lock lever.
② Wind the microphone spacer (sheet type, supplied with this unit and the microphone) around the microphone, while peeling off the protective sheets on both sides of the microphone spacer.
③ Place the microphone in the holder so that "UP" is at the top.
④ Close the microphone holder.
⑤ Tighten the screw.
⑥ Position so that the microphone does not interfere with the viewfinder and tighten the ball joint lock lever.

When attaching the ECM-678/673, use the microphone adaptor supplied with the CAC-12 Microphone Holder.



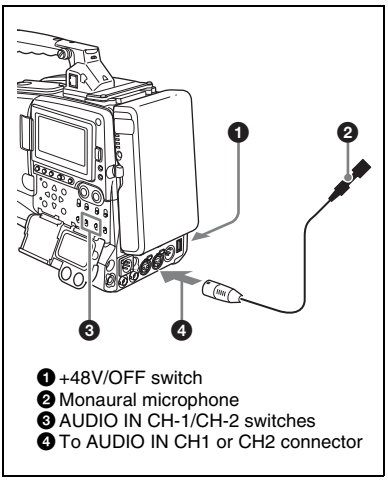


2 Connect the microphone cable to the AUDIO IN CH1 or CH2 connector.

3 Set the switches as follows.

Set the LINE / AES/EBU / MIC selector to MIC.

- Set the +48V/OFF switch indicated below, depending on the power supply type of the microphone.
  Internal power supply: Set the +48V/OFF switch to OFF.
  External power supply: Set the +48V/OFF switch to +48V.
- Set the AUDIO IN (CH-1/CH-2/CH-3/CH-4) switch for the channel to which the microphone is connected to REAR (for CH-1/CH-2) or R (for CH-3/CH-4).



4 Switch the input level to match the sensitivity of the microphone used.

Switch the input level by changing the REAR MIC REF setting on the AUDIO-1 page of the MAINTENANCE menu (factory default setting is –60 dB). *For details, see page 171.*

XLR connection automatic detection function

With the XLR connection automatic detection function being on, when a cable is connected to the AUDIO IN CH1 or CH2 connector, the input from that connector is automatically selected for audio recording, regardless of the setting of the AUDIO IN CH-1 or CH-2 switch.
The XLR connection automatic detection function can be switched on or off on the

AUDIO-1 page of the MAINTENANCE menu, with the REAR XLR AUTO item.

Notes

- If the input level on this unit is not at an appropriate setting for the microphone sensitivity, loud sounds may be distorted, and the signal-to-noise ratio may be affected.
- In order for the AUDIO IN CH1 and CH2 connectors on the camcorder to be able to provide a phantom 48 V power supply, female XLR connectors (3-pin) are fitted. If the microphone cable has a female connector, use an adaptor.
- When you detach a CAC-12 Microphone Holder once you have attached to the camcorder, be careful not to lose the two screws fixing the CAC-12 (in step **1**). After detaching the CAC-12, be sure to put the two screws back into their original places.

Attaching a digital wireless receiver (when using digital wireless microphone)

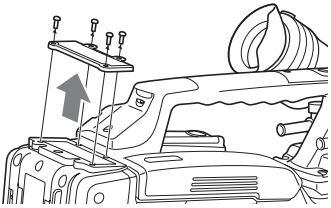
To use a Sony digital wireless microphone, attach one of the following wireless receivers.

- DWR-S02DN Digital Wireless Receiver
- URX-S03D UHF Synthesized Diversity Tuner

Also refer to the operating instructions for the digital wireless receiver.

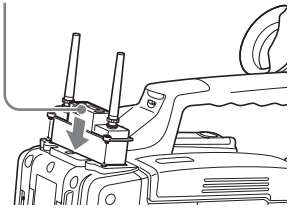
To attach the DWR-S02DN/URX-S03D

1 Remove the four fixing screws holding the cover of the portable tuner/receiver housing slot located in the rear of this unit, to remove the cover.



2 Insert the DWR-S02DN or URX-S03D, and tighten the four screws to secure in place.

DWR-S02DN or URX-S03D



3 Set the AUDIO IN switch for the channel to which you want to input audio signal to WIRELESS *(see page 24)*.

Notes

- When the XLR connection automatic detection function is on, even if the AUDIO IN CH-1 or CH-2 switch is set to WIRELESS, the signal input to the AUDIO IN CH1 or CH2 connector is automatically selected when an audio cable is connected to the AUDIO IN CH1 or CH2 connector. In such a case, set REAR XLR AUTO to OFF on the AUDIO-1 page of the MAINTENANCE menu. (The factory default setting is OFF.)
- When the LINE / AES/EBU / MIC selector is set to LINE or MIC, the audio signals recorded on audio channels 3 and 4 are not affected by the XLR automatic detection function. They are determined by the settings of the AUDIO IN CH-3 and CH-4 switches.

Connecting line input audio equipment

Connect the audio output connector of the audio equipment that supplies the line input signal to the AUDIO IN CH1 or CH2 connector.

Switch settings

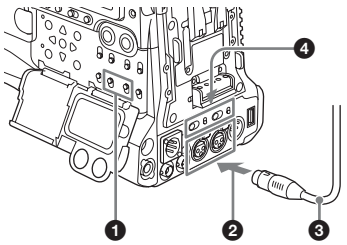
Set the LINE / AES/EBU / MIC selector for the channel to which the audio signal source is connected to LINE.

Selecting the audio inputs to be recorded

- With the XLR connection automatic detection function being off (the factory default setting): A signal must be selected for audio recording by setting the AUDIO IN CH-1 or CH-2 switch to REAR depending on which of the AUDIO IN CH1 and CH2 connectors is used for connecting the external audio equipment.

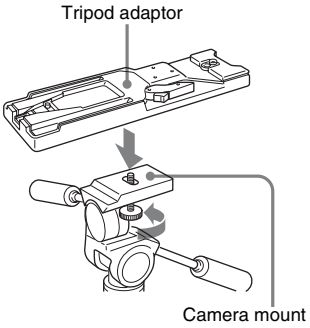
• With the XLR connection automatic detection function being on: When a cable is connected to the AUDIO IN CH1 or CH2 connector, the input from that connector is automatically selected for audio recording, regardless of the setting of the AUDIO IN CH-1 or CH-2 switch.

The XLR connection automatic detection function can be switched on or off on the AUDIO-1 page of the MAINTENANCE menu, with the REAR XLR AUTO item.

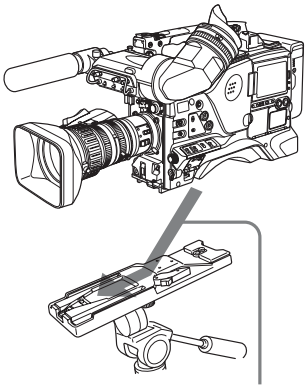


Tripod Mounting

1 Attach the VCT-14 tripod adaptor (not supplied) to the tripod.



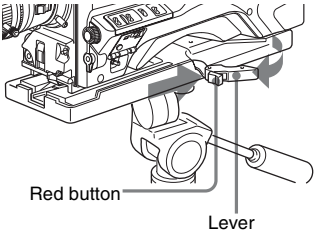
2 Mount the camcorder on the tripod adaptor.



3 Try to move the camcorder back and forth to confirm that it does not slip off the attachment.

To remove the camcorder from the tripod adaptor

Hold down the red button and pull the lever in the direction of the arrow.



Note

The tripod adaptor pin may remain in the engaged position even after the camcorder is removed. If this happens, press the red button against the lever a second time and move the lever as shown above until the pin returns to the stowed position. If the pin remains in the engaged position, you will not be able to mount the camcorder on the tripod adaptor.

Connecting a Video Light

With this camcorder, you can use the Anton Bauer Ultralight 2 or equivalent video light (powered by 12 V with maximum power consumption of 50 W).

- If you connect the video light to the LIGHT connector on the camcorder and set the LIGHT switch to AUTO, you can turn the light on and off automatically as you start and stop the VDR operation.
- The output of the LIGHT connector on the camcorder is controlled to 12 V even when the camcorder is supplied with over 12 V power (through the DC IN connector or battery pack). The brightness or color temperature of the light will not change according to voltage increase.

Notes

- Do not use a video light with power consumption of over 50 W.
- The brightness or color temperature of the light will change when the voltage (supplied through the DC IN connector or from the battery pack) is under 12 V.

To attach the video light

Fit the video light to the accessory fitting shoe on the camcorder grip, and connect the video light cable to the LIGHT connector.

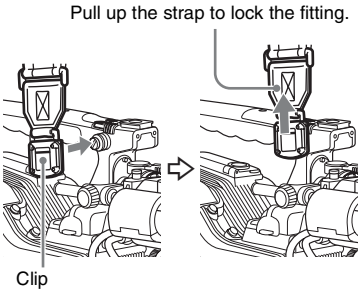
Note

The accessory fitting shoe on this unit is of the $^1/_4$-inch tapped hole type. If you want to replace this with a slide-type shoe, contact a Sony service representative.

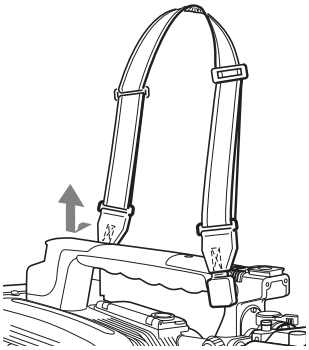
Using the Shoulder Strap

To attach the shoulder strap

1 Fit one of the clips to a shoulder strap fitting.

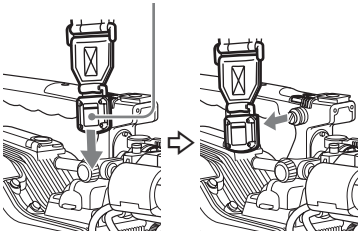


2 Fit the other clip to the shoulder strap fitting on the other side of the grip in the same way as in step 1.



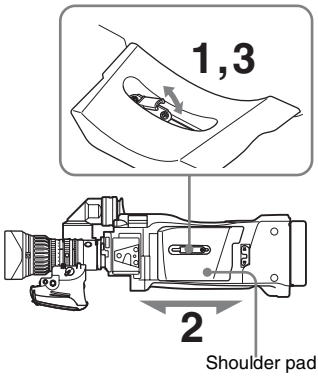
To remove the shoulder strap

Press here and pull in the direction shown by the arrow to release.



Adjusting the Shoulder Pad Position

You can shift the shoulder pad from its center position (the factory default setting) backward by up to 10 mm ($^{13}/_{32}$ inch) or forward by up to 25 mm (1 inch). This adjustment helps you get the best balance for shooting with the camcorder on your shoulder.



1 Raise the lever in the center of the shoulder pad to unlock the shoulder pad.

2 Slide the shoulder pad backward or forward until it is in the most convenient position.

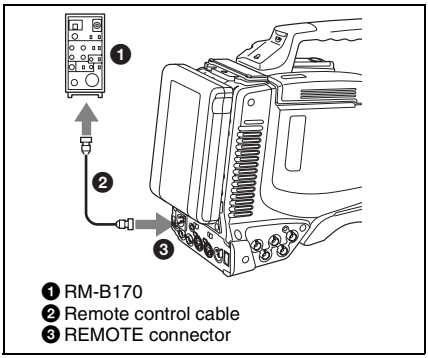
3 Bring down the lever to lock the shoulder pad in the selected position.

Connecting the Remote Control Unit

Note

Before connecting/disconnecting a remote control unit to/from the camcorder, be sure to turn the power of the camcorder off.

Connecting the RM-B170 Remote Control Unit enables remote control of the principal camera functions.
Connecting the remote control unit to the REMOTE connector (8-pin) automatically puts the camcorder into remote control mode. If you disconnect the remote control unit, the remote control mode is cancelled.



Camcorder switch functions when the remote control unit is connected

The following switches on the camcorder do not function.

- GAIN selector
- OUTPUT/DCC switch
- WHITE BAL switch
- AUTO W/B BAL switch
- SHUTTER selector
- Button to which the TURBO SWITCH function has been assigned (ASSIGN 1/3/4/5 switch or RET button on the lens)
- REC START button (and the VTR button on the lens, and the button to which the recording start/stop function has been assigned (ASSIGN 1/3/4/5 switch or RET button on the lens)) (when the RM REC START item on the CAM

CONFIG 2 page of the MAINTENANCE menu is set to RM)

Paint adjustment when the remote control unit is connected

The settings of the paint adjustment that were in effect the last time the remote control unit was used are recalled.

Function of the recording start/stop buttons when the remote control unit is connected

When the remote control unit is connected, you can make a setting to determine which of the recording start/stop buttons you will use. This setting is made using the RM REC START item on the CAM CONFIG 2 page of the MAINTENANCE menu.

Relationship between the setting of the RM REC START item and the function of recording start/stop buttons

Recording start/stop button	Settings of RM REC START		
	RM	CAM	PARA
Camcorder's REC START button	Disabled	Enabled	Enabled
Lens VTR button	Disabled	Enabled	Enabled
Button to which the recording start/stop function has been assigned (camcorder ASSIGN 1/3/4/5 switch or RET button on the lens)	Disabled	Enabled	Enabled
Remote control unit's VTR button	Enabled	Disabled	Enabled

When the monitor is connected to the MONITOR OUT connector of the remote control unit

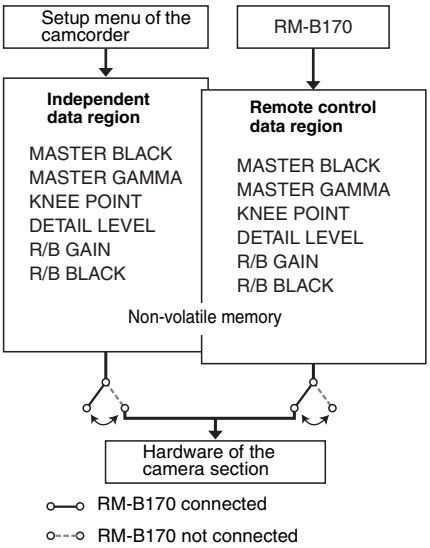
The MONITOR connector (BNC type) of the RM-B170 outputs the same signal as that from the TEST OUT connector on the camcorder.
Use the black cable supplied with the RM-B170 to connect the monitor to the MONITOR connector on the RM-B170.

When the remote control unit is disconnected from the camcorder

The camcorder settings return to the settings in effect before the remote control unit was connected.

Structure of the paint adjustment data

The non-volatile memory of the camcorder used for storing paint adjustment data consists of two regions as shown below: one is the "independent data region" that is used when a remote control unit is not connected, and the other is the "remote control data region" that is used when a remote control unit is connected. Paint adjustment data is automatically selected and output to the camera section depending on whether or not a remote control unit such as the RM-B170 is connected.



Thus, when a remote control unit is connected to the camcorder, the effective data region is switched to the "remote control data region" and the settings of the paint adjustment that were in effect the last time the remote control unit was used are recalled.
The settings of the absolute value rotational controls [1)] and absolute value switches [2)] are overwritten by those on the remote control unit after the remote control unit is connected.
When the remote control unit is disconnected from the camcorder, the "independent data

region" becomes effective. Thus the camcorder will return to the settings that were in effect before the remote control unit was connected.

1) **Absolute value rotational controls:** The data corresponding to the angular position of controls is output. Rotational controls for which the data corresponding to the amount of their rotation is output are called relative value controls.
2) **Absolute value switches:** Like toggle switches or slide switches (except momentary switches), the switches (or knobs) whose positions must coincide with their functions are called absolute value switches.

When RM COMMON MEMORY on the CAM CONFIG 2 page of the MAINTENANCE menu is set to "ON", you can use settings of the paint adjustment data stored in the independent data region even if you connect the remote control unit. In this case, the settings stored in the independent data region will be renewed when you change the settings on the remote control unit. Thus, the settings of the paint data made with the remote control unit can be retained even if the remote control unit is removed. However, if the switch position on the remote control unit differs from the one on the camcorder, the switch position on the camcorder takes precedence over that on the remote control unit.
Also, it is possible to keep the settings that are in effect before you connect the remote control unit. In this case, you should set the control knob to the relative value mode on the remote control unit.

For details, refer to the operation manual supplied with the remote control unit.

Chapter 3 Adjustments and Settings for Shooting

Setting the Recording Format

The recording formats supported by this camcorder are as follows.

Video

Recording format	Resolution	System frequency [a]
MPEG HD422 50 (Bit rate: 50 Mbps)	1080	59.94i/29.97P/ 50i/25P/ 23.98P
	720	59.94P/50P
MPEG HD420 HQ/ SP (Bit rate: 35/25 Mbps)	1080	59.94i/29.97P/ 50i/25P/ 23.98P
	720	59.94P/50P
MPEG IMX 50/40/ 30 (Bit rate: 50/40/30 Mbps)	525	59.94i [b]
		29.97P
	625	50i [c]
		25P
DVCAM (Bit rate: 25 Mbps)	525	59.94i [b]
		29.97P
	625	50i [c]
		25P

a) **59.94i/29.97P/59.94P:** When the area of use is set to NTSC(J)AREA/NTSC AREA.
50i/25P/50P: When the area of use is set to PAL AREA.

b) When the combination of the SYSTEM LINE and SYSTEM FREQUENCY settings is 1080/59.9i or 720/59.9P

c) When the combination of the SYSTEM LINE and SYSTEM FREQUENCY settings is 1080/50i or 720/50P

Audio

Recording format	Number of channels
24bit/48kHz	8 channels [a]
	4 channels [b]
16bit/48kHz	8 channels [b]
	4 channels [c]

a) When the video recording format is set to MPEG HD422 50.

b) When the video recording format is set to MPEG IMX 50/40/30.

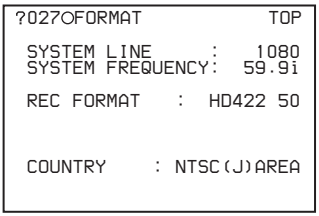
c) When the video recording format is set to MPEG HD420 HQ/SP or DVCAM.

Notes

- It is not possible to combine material recorded in different frame frequency groups on a single disc *(see page 52)*.
- This unit can record up to four channels of audio. If you select a format with eight channels of audio, silence is recorded in channels 5 to 8.

Setting the system frequency

1 Display the FORMAT page of the OPERATION menu.



For details on menu operations, see "Basic menu operations" (page 192).

2 Select SYSTEM FREQUENCY, and turn the MENU knob to select the desired system frequency.

You can select the frequency shown below depending on the combination of the COUNTRY and SYSTEM LINE settings.

COUNTRY	SYSTEM LINE	SYSTEM FREQUENCY
NTSC(J)AREA NTSC AREA	1080	59.9i/29.9P/ 23.98P
	720	59.9P
PAL AREA	1080	50i/25P
	720	50P

Change the COUNTRY or SYSTEM LINE setting as required.

Setting the video recording format

1 Display the FORMAT page of the OPERATION menu.

For details on menu operations, see "Basic menu operations" (page 192).

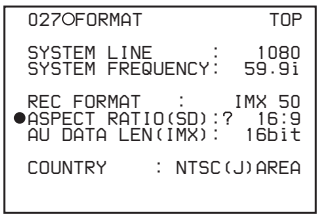
2 Select REC FORMAT, and turn the MENU knob to select the desired recording format.

As you turn the MENU knob, the recording format changes as follows: HD422 50 ⟷ HD420 HQ ⟷ HD420 SP ⟷ IMX 50 ⟷ IMX 40 ⟷ IMX 30 ⟷ DVCAM.

To set the aspect ratio (when IMX 50, IMX 40, IMX 30, or DVCAM is selected)

Select ASPECT RATIO(SD) on the FORMAT page, and turn the MENU knob to select the desired aspect ratio.

As you turn the MENU knob, the aspect ratio changes as follows: 16:9 ⟷ 4:3.



Note

The unit ignores this setting when it records video from external devices *(see page 96)*.

To set the audio recording format (when IMX 50, IMX 40, or IMX 30 is selected)

Select AU DATA LEN(IMX) on the FORMAT page or AUDIO-2 page of the MAINTENANCE menu, and turn the MENU knob to select the desired audio recording format.

As you turn the MENU knob, the audio recording format changes as follows: 16bit ⟷ 24bit.

Mixed recording of clips in different formats on the same disc

As long as the frame frequency group is the same, clips in different recording formats can be recorded or written to the same disc. [1)]

In this manual, this is referred to as "mixed format recording mode".

1) The recording format is regarded as different whenever the system frequency, video resolution, video codec/bit rate, or number of audio channels or number of bits does not match.

Notes

- Regardless of frame frequency group matching, it is not possible to mix clips with different video resolutions (number of system lines) in the same clip list.
- When the unit is in a mode that calls for playback across clips that were recorded in different recording formats, video and audio playback may stop at the point where the format changes from one format into another, and then start again.

Frame frequency groups

The system frequencies supported by this unit are divided into frame frequency groups, as shown in the following table.

Frame frequency group	System frequency
59.94 Hz	59.94P
	59.94i
	29.97P
50 Hz	50P
	50i
	25P
23.98 Hz	23.98P

You can record clips with different recording formats, for example HD422 and HD420SP clips, by putting this unit into mixed format recording mode.

To enable mixed format recording mode

Set MIXED RECORDING on the CAM CONFIG 1 page of the MAINTENANCE menu to "ENABL".

If you want to disable mixing of clips with different recording formats, leave this item set to

"DSABL". However, regardless of the mixed format recording mode setting, it is always possible to mix clips in the following format groups.

- HD420 HQ, SP, and LP
- 1080/59.94i and 1080/29.97P
- 1080/50i and 1080/25P

Adjusting the Black Balance and the White Balance

To ensure excellent image quality when using this camcorder, conditions may require that both the black balance and the white balance be adjusted.

Black balance adjustment

The black balance will require adjustment in the following cases.

- When the camcorder is used for the first time
- When the camcorder has not been used for a long time
- When the camcorder is used under conditions in which the surrounding temperature has changed greatly
- When the GAIN selector (L/M/H) values have been changed by using the USER menu

It is not usually necessary to adjust the black balance when using the camcorder after it has been off.

White balance adjustment

Always readjust the white balance when the lighting conditions change.

Viewfinder screen displays

If the black balance or white balance adjustment is started, messages that report on the progress and results are displayed on the viewfinder screen when the VF DISP MODE item is set to "2" or "3" on the VF DISP 1 page of the USER menu.

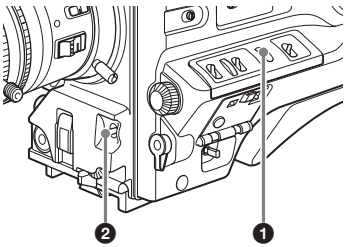
Note

Black balance and white balance adjustment values that are automatically set by the camcorder and the various settings are stored in the camcorder memory and retained even when the power is turned off.

Adjusting the black balance

In automatic black balance mode, adjustments are performed in the following order: black set and black balance. Manual black balance adjustment can be selected from the setup menu.

For details of manual black balance adjustment, refer to the Maintenance Manual.

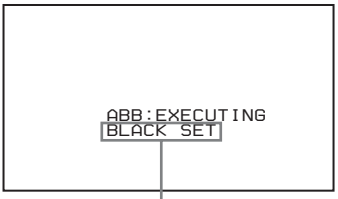


❶ OUTPUT/DCC switch
❷ AUTO W/B BAL switch

1 Set the OUTPUT/DCC switch to CAM.

2 Flick the AUTO W/B BAL switch to BLK and release the switch.

The switch returns to the center position, and the adjustment is executed.
During adjustment, the following message is displayed on the viewfinder screen.



The messages change in the following sequence :
BLACK SET
↓
BLACK BALANCE

The black balance adjustment ends in a few seconds with the message “ABB:OK” and the adjustment value is automatically stored in memory.

Notes

- During the black balance adjustment, the iris is automatically closed.
- During the black balance adjustment, the gain selection circuit is automatically activated so you may see flickering on the viewfinder screen, but this is not a fault.

If automatic black balance adjustment cannot be made

If the black balance adjustment cannot be completed normally, an error message will appear for about 3 seconds on the viewfinder screen.

Possible messages are listed below.

Error message	Meaning
ABB : NG IRIS NOT CLOSE	The lens iris did not close; adjustment was impossible.
ABB : NG TIME LIMIT	Adjustment could not be completed within the standard number of attempts.
ABB : NG R (or G or B) : OVERFLOW	The difference between the reference value and the current value is so great that it exceeds the range. Adjustment was impossible.

If any of the above error messages is displayed, retry the black balance adjustment.
Keep pushing the AUTO W/B BAL switch to BLK until “-BLACK SET-” appears after “-BLACK BALANCE-” appears. If the error message occurs again, an internal check is necessary.

For information about this internal check, refer to the Maintenance Manual.

Note

If the lens cable is not firmly connected to the LENS connector, it may not be possible to adjust the lens iris. If this happens, the black balance will be incorrect.

Black balance memory

Values stored in memory are held until the black balance is next adjusted.

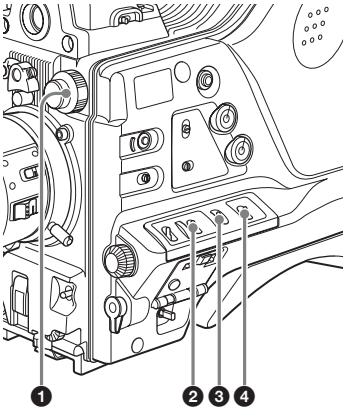
If a memory error occurs

If the error message “: STORED DATA : NG” flashes on the viewfinder screen when the camcorder is turned on, the black balance and white balance memory contents have been lost. Adjust the black balance and white balance again. Contact a Sony representative if this message continues to appear even after the black balance and white balance have been adjusted again.

For details, refer to the Maintenance Manual.

Adjusting the white balance

1 Set the switches and selectors as shown in the figure below.



a)White balance setting values are stored in memory B only when the WHITE SWITCH <B> item is set to "MEM" on the WHITE SETTING page of the OPERATION menu.

If the setting of the GAIN selector or WHITE BAL switch is changed, a message reporting the new setting position appears for about 3 seconds in the setting change and adjustment progress message display area of the viewfinder screen.

2 Set the FILTER selector to suit the lighting conditions as follows.

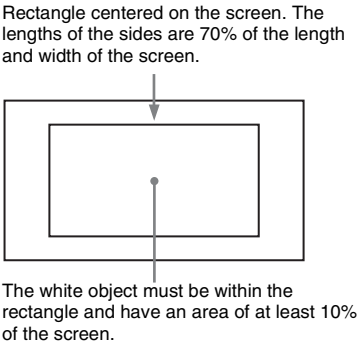
The possible settings of the FILTER selector and their corresponding filters to be selected are listed below.

FILTER selector (inner knob) setting	ND filter
1	CLEAR
2	1/4 ND
3	1/16 ND
4	1/64 ND

If the setting of the FILTER selector is changed, a message reporting the setting change and adjustment progress message display area of the viewfinder screen (in display mode 3).

3 Place a white test card under the same lighting conditions as for the subject to be shot and zoom up to it.

Alternatively, any white object such as a cloth or a wall can be used.
The absolute minimum white area is as follows.


Rectangle centered on the screen. The lengths of the sides are 70% of the length and width of the screen.
The white object must be within the rectangle and have an area of at least 10% of the screen.

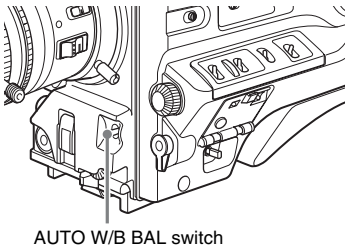
Note

Make sure there are not bright spots in the rectangle.

4 Adjust the lens iris.

Manually adjusted lens: set the iris to an appropriate setting.
Lens with automatic iris: set the automatic/manual switch on the lens to automatic.

5 Flick the AUTO W/B BAL switch to WHT and then release the switch.

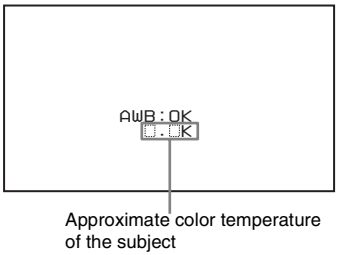


The switch returns to the center position, and the adjustment is executed.

During adjustment, the message "AWB:EXECUTING WHITE BALANCE"

is displayed on the viewfinder screen (in display mode 2 or 3).

The white balance adjustment ends in about one second with the message shown in the following figure, and the adjustment setting is automatically stored in the memory (A or B) that was selected in step **1**.



Note

If the camera has a zoom lens with an automatic iris, the iris may hunt [1] during the adjustment. To prevent this, adjust the iris gain knob (indicated as IG, IS, or S) on the lens.

For details, refer to the lens operation manual.

1) **Hunting:** Repeated brightening and darkening of the image, resulting from repeated response to automatic iris control.

If the automatic white balance adjustment cannot be made

If the white balance adjustment cannot be completed normally, an error message will appear for about 3 seconds on the viewfinder screen (in display mode 2 or 3).
Possible messages are listed below.

Error message	Meaning
WHITE : NG LOW LEVEL	The white video level is too low. Either open the lens iris or increase the gain.
WHITE : NG COLOR TEMP HIGH	The color temperature is too high.
WHITE : NG COLOR TEMP LOW	The color temperature is too low.
WHITE : NG TIME LIMIT	Adjustment could not be completed within the standard number of attempts.
WHITE : NG POOR WHITE AREA	The white area could not be checked.
WHITE : NG OVER LEVEL	The white video level is too high. Either stop down the lens iris or change the ND filter.

If any of the above error messages is displayed, retry the white balance adjustment. If the error message occurs again, an internal check is necessary.

For information about this internal check, refer to the Maintenance Manual.

If you have no time to adjust the white balance

Set the WHITE BAL switch to PRST.

For details of automatic white balance adjustment, see page 55.

White balance memory

Values stored in memory are held until the white balance is next adjusted.
There are two sets of white balance memories, A and B, and adjustments for each of the CC filters can be automatically stored in the memory corresponding to the setting (A or B) of the WHITE BAL switch. The camcorder has four built-in CC filters, so a total of eight (4 × 2) adjustments can be stored. However, the memory contents are not linked to the CC filter settings in the following cases.

- When the number of memories allocated to each of A and B is limited to one by setting the FILTER WHT MEM item on the WHITE SETTING page of the OPERATION menu to OFF.

If the WHITE BAL switch is set to B, and on the WHITE SETTING page of the OPERATION menu, the WHITE SWITCH <B> item is set to “ATW (Auto Tracing White Balance)”, the ATW function is activated to automatically adjust the white balance of the picture being shot for varying lighting conditions.

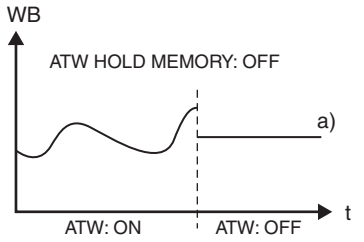
To save white balance settings obtained by ATW

Set ATW HOLD MEMORY in the WHITE SETTING page of the OPERATION menu to “ON”. When this is done, auto white balance settings obtained by ATW are written to the

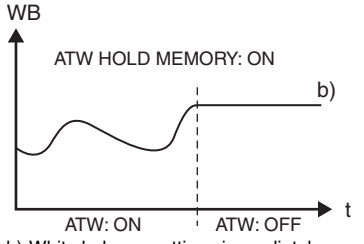
memory corresponding to the setting (A or B) that is currently selected with the WHITE BAL switch. [1)]

You can then turn ATW off and continue shooting with the current white balance values. The unit continues to use the values that were in effect immediately before ATW was turned off.

1) This function is not available when the WHITE BAL switch is set to PRST. If you have connected a remote control unit, the unit uses the memory corresponding to the remote control unit setting (A, B, or C).



a) White balance settings stored in memory A, B, or C



b) White balance settings immediately before ATW was turned off.

White balance settings used when ATW is turned off
(WB: White balance setting value, t: Shooting time)

If a memory error occurs

If the error message ": STORED DATA : NG" flashes on the viewfinder screen when the camcorder is turned on, the white balance and black balance memory contents have been lost. Adjust the white balance and black balance again. Contact a Sony representative if this message continues to appear even after the white balance and black balance have been adjusted again.

For details, refer to the Maintenance Manual.

Setting the Electronic Shutter

Shutter modes

The shutter modes that can be used with the electronic shutter and the shutter speeds that can be selected are listed below.

Standard mode

Select this mode for shooting fast-moving subjects with little blurring.

SYSTEM LINE setting	System frequency	Shutter speed (unit: seconds)
1080	59.94i	$^1/_{100}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
	50i	$^1/_{60}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
	29.97P	$^1/_{40}$ a), $^1/_{60}$, $^1/_{120}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
	25P	$^1/_{33}$ a), $^1/_{50}$, $^1/_{100}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
	23.98P	$^1/_{32}$ a), $^1/_{48}$, $^1/_{50}$, $^1/_{60}$, $^1/_{96}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
720	59.94P	$^1/_{100}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
	50P	$^1/_{60}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$

a) This speed cannot be selected when the unit is in Slow & Quick Motion mode and FRAME RATE on the REC FUNCTION page of the OPERATION menu is set to a value that is greater than the system frequency.

ECS (Extended Clear Scan) mode

Select this mode for obtaining images with no horizontal bands of noise when shooting subjects such as monitor screens.

SYSTEM LINE setting	System frequency	Shutter speed (unit: Hz)
1080	59.94i	60.00 to 4300
	50i	50.00 to 4700
	29.97P a)	30.00 to 2700
	25P a)	25.00 to 2300
	23.98P a)	24.00 to 2200
720	59.94P	60.00 to 4300
	50P	50.00 to 4700

a) When the unit is in Slow & Quick Motion mode and FRAME RATE on the REC FUNCTION page of the OPERATION menu is set to a value that is greater than the system frequency, the lower limits for shutter speed settings are as shown below.
29.97P: 60.00Hz
25P: 50.00Hz
23.98P: 48.00Hz

SLS (slow speed shutter) mode

Select this mode for shooting subjects in low level lighting conditions.

SYSTEM LINE setting	Shutter speed (unit: frames)
1080	2, 3, 4, 5, 6, 7, 8, 16
720	2, 4, 6, 8, 16

Notes

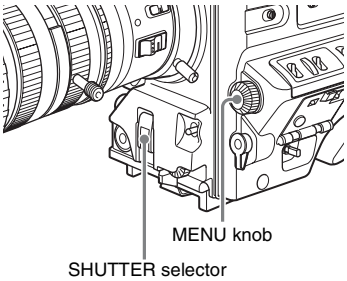
- Whatever the operating mode of the electronic shutter, the sensitivity of the CCD decreases with increasing shutter speed.
- When the automatic iris is used, the iris opens wider as the shutter speed increases, thus reducing the depth of field.
- Under artificial light, particularly fluorescent or mercury lamps, the light intensity may appear to be constant, but the red, green, and blue intensities are actually changing in synchronization with the frequency of the power supply causing flicker. Using an electronic shutter under such lighting could make the flicker even worse. Color flicker is particularly likely to happen when the power supply frequency is 60 Hz. However, if the power frequency is 50 Hz, setting the shutter speed to $^1/_{100}$ can reduce this flicker.
- When a bright object is shot in ECS mode in such a manner that it fills the screen, the upper edge of the picture may have poor quality because of an inherent characteristic of CCDs. Before using ECS mode, check the shooting conditions.
- The selectable shutter speeds vary depending on the current system frequency.
- In SLS mode, white flecks are more prominent when you set the shutter speed (number of frames) to higher values.
  Executing the APR(SLS) function on the APR page

(see page 181) may alleviate the problem of white flecks in SLS mode.

Selecting the shutter mode and shutter speed

Switching the shutter mode, and the shutter speed in standard mode: Repeatedly flick the SHUTTER selector to the SELECT side *(see the next section)*.

Switching the shutter speed in ECS mode and SLS mode: Select ECS mode or SLS mode with the SHUTTER selector, and then turn the MENU knob *(see page 59)*.



You can use the SHT ENABLE page of the OPERATION menu to narrow the range of choice in advance, or to select in advance whether or not you use ECS or SLS.

To set the shutter mode and standard-mode shutter speed

Once the shutter speed is selected, it is retained even when the camcorder power is turned off.

1 Follow the procedure described in "Selecting the display items" *(page 200)* to set the VF DISPLAY MODE item to "2" or "3" on the VF DISP 1 page of the USER menu.

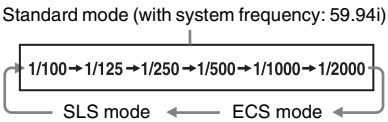
2 Flick the SHUTTER selector from ON to SELECT.

The current shutter setting indication appears for about 3 seconds in the setting change and adjustment progress message display area of the viewfinder screen.

Examples: ": SS : 1/250", ": ECS : 60.0 Hz"

3 Before the shutter setting indication disappears, flick the SHUTTER selector down to SELECT again and repeat this until the desired mode or speed appears.

When all modes and speeds are displayed, the display changes in the following order.



If you have changed the configuration, only the selected modes and speeds appear.

- *When the unit is shipped from the factory, it is configured to display all of the modes and speeds in "Shutter modes" (page 58), except SLS mode. You can change this configuration by selecting only the required modes and speeds on the SHT ENABLE page of the OPERATION menu (see page 157).*
- *Shutter speeds in standard mode can also be switched to angle display by using SHT DISP MODE in the CAM CONFIG 2 page of the MAINTENANCE menu (see page 178).*

To set the shutter speed in ECS or SLS mode

1 Set the shutter speed mode to ECS or SLS *(see the previous item)*.

2 Turn the MENU knob to select the desired frequency or number of frames.

When the RM-B170 Remote Control Unit is connected

You can set the shutter speed of ECS or SLS with the RM-B170.

To change the range of choice of shutter mode and speed settings

You can reduce the time required to select the shutter mode and speed by narrowing the choice of settings in advance. This can be done by using the SHT ENABLE page of the OPERATION menu.

Note

The settings selected on the SHT ENABLE page of the OPERATION menu become invalid when the RM-B170 or another remote control unit is connected to the camcorder.

1 Display the SHT ENABLE page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

```
 025OSHT ENABLE

➡SHUTTER ECS      :●     ON
 SHUTTER SLS      :      OFF
 SHUTTER 1/100    :      ON
 SHUTTER 1/125    :      ON
 SHUTTER 1/250    :      ON
 SHUTTER 1/500    :      ON
 SHUTTER 1/1000   :      ON
 SHUTTER 1/2000   :      ON
```

2 Turn the MENU knob to move ➡ to the shutter mode or shutter speed you want, then press the MENU knob.

➡ on the left of the selected item changes to ● and ● on the left of the setting changes to **?**.

3 Turn the MENU knob until ON appears, then press the MENU knob.

● on the left of the selected item changes to ➡ and **?** on the left of the setting changes to ●.

To set another mode or speed, return to step **2**.

Note that only the shutter speeds set to ON can be selected with the SHUTTER selector.

4 To end the menu operation, set the MENU ON/OFF switch to OFF or close the cover of the menu operating section.

The menu disappears from the screen and the display indicating the current status of the camcorder appears along the top and bottom of the screen.

To set the shutter speed in degree units

On the SHUTTER SELECT page of the MAINTENANCE menu, you can specify degrees (angle of opening of the shutter) to select the shutter speed in standard shutter mode.

Note

When you enable degree settings, the unit disables all items on the SHT ENABLE page of the OPERATION menu except SHUTTER ECS and SHUTTER SLS.

1 Display the SHUTTER SELECT page of the MAINTENANCE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

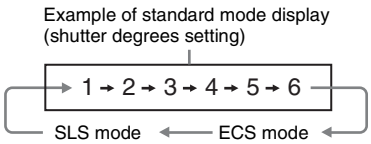
2 Select SHUTTER SELECT, and turn the MENU knob to display DEGREE.

```
 M27OSHUTTER SELECT    TOP

➡SHUTTER SELECT   :●DEGREE
 ADD: ---.-
 DEL:
      DEGREE   SECOND
   1: 216.0    1/99.85
   2: 180.0    1/119.7
   3:  90.0    1/239.0
   4:  45.0    1/475.0
   5:  22.5    1/940.0
   6:  11.2    1/1880
```

Six shutter speeds appear. A registered shuttle angle appears in the DEGREE field of each line. A shutter speed (exposure time, in units of seconds) appears in the SECOND field, as calculated by converting from the selected frame rate.

Each time that you flick the SHUTTER selector to the SELECT side, the setting or mode changes in the following order. (SLS mode and ECS mode appear only when they are enabled on the SHT ENABLE page of the OPERATION menu.)



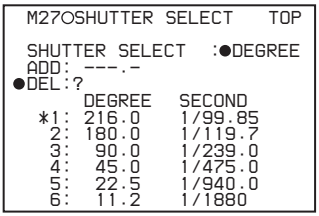
To register user-defined settings

You can register up to six shutter angle settings. If six settings are already registered, you must delete one of the registered settings before registering a new one.

1 Rotate the MENU knob to move the ➡ mark to the DEL position, and then press the MENU knob.

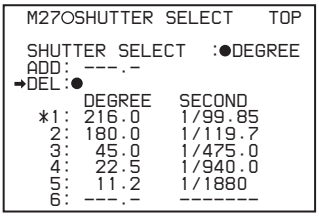
The ➡ mark changes into a ● mark, and the ● mark changes into a ? mark.

Also, a * mark appears before the number.



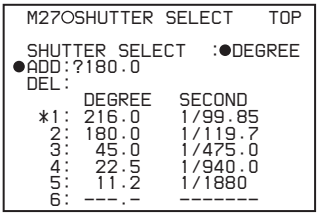
2 Turn the MENU knob to move the * mark to the number of the shuttle angle that you want to change, and then press the MENU knob.

The selected setting is deleted. The numbers of settings after the deleted setting are incremented to bring them up to replace the deleted setting. (The following example shows the display after deletion of the setting "90.0", which had been registered as setting number 3.)



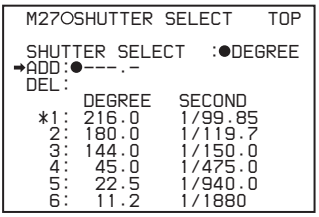
3 Turn the MENU knob to move the ➡ mark to the ADD position, and press the MENU knob.

The ➡ mark changes into a ● mark, and the ● mark changes into a ? mark.



4 Turn the MENU knob to change the value to the right of the ? mark into the shutter angle that you want to register, and then press the MENU knob. (The setting value can be selected over the range 360.0 to 4.5.)

The newly specified shutter angle is assigned to a free slot in the list, and the list is sorted in order of the setting values. (In the figure below, the shutter angle "144.0" was added, and then the list was sorted, so that the angle "144.0" is registered as item number 3.)



To add more user-defined settings

If there is no empty number in the list:

Repeat steps **1** to **4**.

If there is an empty number in the list:

Repeat steps **3** and **4**.

Deleting unneeded settings

When you are selecting shutter speeds, the unit skips numbers that do not have assigned settings. You will be able to select settings more quickly if you delete settings that you use only rarely. You must leave at least one setting, but you can delete settings numbered 2 through 6.

Changing the Reference Value for Automatic Iris Adjustment

The reference value for automatic iris adjustment can be changed to aid the shooting of clear pictures of back-lit subjects, or to prevent blown-out highlights. The reference value for the lens iris can be set within the following range with respect to the standard value.

- 0.25 to 1 (increasing by increments of 0.25): About 0.25 to 1 stop further open
- –0.25 to –1 (decreasing by increments of 0.25): About 0.25 to 1 stop further close

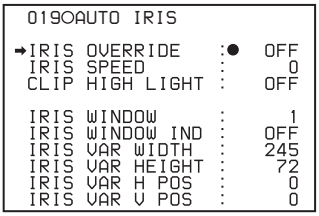
Also you can set the area where light detection occurs.

To change the reference value

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the AUTO IRIS page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).


019○AUTO IRIS
➧IRIS OVERRIDE :● OFF
IRIS SPEED : 0
CLIP HIGH LIGHT : OFF
IRIS WINDOW : 1
IRIS WINDOW IND : OFF
IRIS VAR WIDTH : 245
IRIS VAR HEIGHT : 72
IRIS VAR H POS : 0
IRIS VAR V POS : 0

2 Check that the ➧ mark is at the IRIS OVERRIDE position, and then press the MENU knob.

➧ on the left of the selected item changes to ● and ● on the left of the setting changes to **?**.

3 Turn the MENU knob until "ON" appears, then press the MENU knob.

● on the left of the selected item changes to ➧ and **?** on the left of the setting changes to ●.

The IRIS OVERRIDE item is set to "ON".

4 Set the MENU ON/OFF switch to OFF.

The AUTO IRIS page disappears from the screen.

5 Turn the MENU knob to change the reference value.

Note

Be sure to confirm that the current shutter mode is not ECS.

The changed reference value is retained until the power of the camcorder is turned off. Even if the reference value is changed, it reverts to the standard value every time the power is turned on.

To make the iris more open

Turn the MENU knob counterclockwise as seen from the front of the camera.

The iris stop indicators as shown in the following table appear in the upper part to the left of the F number in the iris indication.

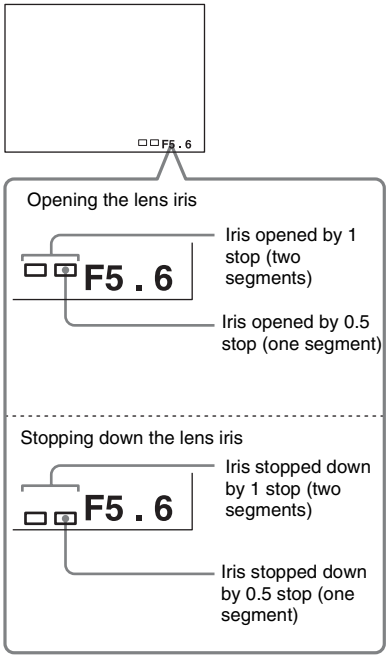
Iris stop	Indicator
0.25	■
0.5	□
0.75	■□
1	□□

To stop down the iris

Turn the MENU knob clockwise as seen from the front of the camera.

The iris stop indicators as shown in the following table appear in the lower part to the left of the F number in the iris indication.

Iris stop	Indicator
–0.25	■
–0.5	□
–0.75	■□
–1	□□


F5.6
Opening the lens iris
F5.6
Iris opened by 1 stop (two segments)
Iris opened by 0.5 stop (one segment)
Stopping down the lens iris
F5.6
Iris stopped down by 1 stop (two segments)
Iris stopped down by 0.5 stop (one segment)

When the RM-B170 Remote Control Unit is connected

The IRIS control knob of the RM-B170 can be used for lens iris setting (auto iris). In this case, the indicator is not displayed.

To set the automatic iris window

1 Follow the procedure of steps 1 and 2 described in the previous item to display the AUTO IRIS page.

2 Turn the MENU knob to move ➧ to IRIS WINDOW IND, then press the MENU knob.

➧ on the left of IRIS WINDOW IND. changes to ● and ● on the left of the setting changes to **?**.

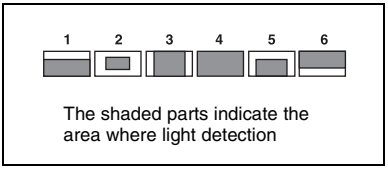
3 Turn the MENU knob until ON appears, then press the MENU knob.

● changes to ➧ and **?** changes to ●.
The currently selected auto iris window appears on the screen.
If it is not necessary to display the auto iris window on the screen, set to OFF.

4 Turn the MENU knob to move ➧ to IRIS WINDOW, then press the MENU knob.

➧ changes to ● and ● changes to **?**.

5 Turn the MENU knob until the desired auto iris window appears, then press the MENU knob.



● changes to ➧ and **?** changes to ●.

If you select “VARIABLE”, the following items become effective and you can set the window of the desired size. Set each item to the desired size.

Item	Setting
IRIS VAR WIDTH	The width of the window
IRIS VAR HEIGHT	The height of the window
IRIS VAR H POS.	The position of the window in the horizontal direction
IRIS VAR V POS.	The position of the window in the vertical direction.

6 Set the MENU ON/OFF switch to OFF.

The menu disappears from the screen and the display indicating the current status of the camcorder appears along the top and bottom of the screen.

To counter problems with very bright highlights

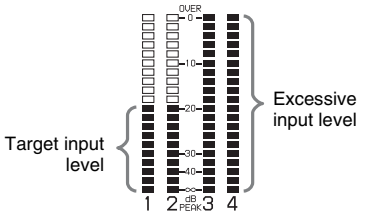
If the subject is too bright, the iris may close too much, leaving the overall image dark, or the highlights may be blown out. In such cases, setting the highlight clip function on reduces the luminance range, avoiding problems from the automatic iris correction.
In the AUTO IRIS page of the USER menu, set the CLIP HIGH LIGHT item to ON.

Adjusting the Audio Level

Setting the AUDIO SELECT CH-1/CH-2 switches to AUTO automatically adjusts the input levels of the audio signal to be recorded in audio channels 1 and 2. You can also adjust the audio level manually.
For audio channels 3 and 4, menu settings allow you to select automatic adjustment, manual adjustment, or fixed.

Target audio level for automatic audio level adjustment

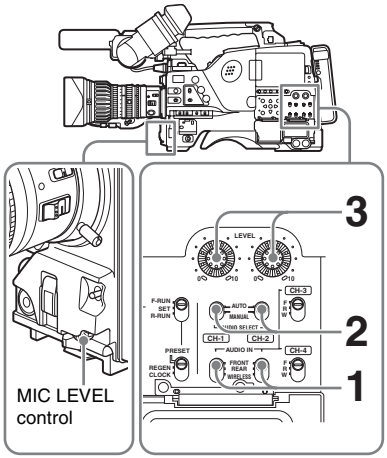
Make adjustment using –20 dB as the target level. If the audio level meter shows a maximum level of 0 dB, then it indicates that the input audio level is excessive.



Manually adjusting the audio levels of the audio inputs from the AUDIO IN CH1/CH2 connectors

With the XLR connection automatic detection function being on, when a cable is connected to the AUDIO IN CH1 or CH2 connector, the input from these connectors is automatically selected for audio recording. In this case, start the operation from step **2**.

You can turn on and off the XLR connection automatic detection function on the AUDIO-1 page of the MAINTENANCE menu.



1 To adjust the signal input to the AUDIO IN CH1 or CH2 connector, set the AUDIO IN CH-1 or CH-2 switch to REAR.

To adjust both input signals, set both switches to REAR.

2 Set the AUDIO SELECT switch(es) corresponding to the channel(s) selected in step 1 to MANUAL.

3 With the LEVEL control(s) for the channel(s) selected in step 1, adjust so that the audio level meter shows up to –20 dB for a normal input volume.

Correspondence between recording level adjustments and audio level controls

On the AUDIO-3 page of the MAINTENANCE menu, you can select which audio level control controls the audio recording level of the input to each of the AUDIO IN CH1/CH2 connectors. The correspondences between the settings of the menu items and the controls are as follows.

REAR1/WRR LEVEL: Audio recording level of channel 1

Setting	Control
SIDE1	LEVEL (CH-1) control (on the left)
FRONT	MIC LEVEL control
F+S1	LEVEL (CH-1) control linked with MIC LEVEL control.

REAR2/WRR LEVEL: Audio recording level of channel 2

Setting	Control
SIDE2	LEVEL (CH-2) control (on the right)
FRONT	MIC LEVEL control
F+S2	LEVEL (CH-2) control linked with MIC LEVEL control.

Note

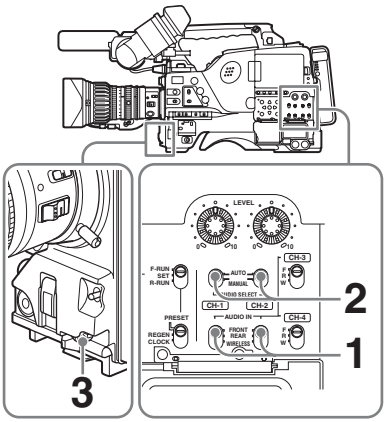
When you have operation of the LEVEL (CH-1/CH-2) controls and MIC LEVEL control linked together, if the MIC LEVEL control is set to 0, the audio signals on channels 1 and 2 cannot be recorded. Check the position of the MIC LEVEL control before adjusting the LEVEL (CH-1/CH-2) controls.

Manually adjusting the audio level of the MIC IN connector

Note

If the XLR connection automatic detection mode is on, when the cables are connected to the AUDIO IN CH1/CH2 connectors, the camcorder detects the connection to the AUDIO IN CH1/CH2 connectors. Thus, the AUDIO IN switches are internally reset to REAR and the audio signals input to the AUDIO IN CH1/CH2 connectors are automatically selected.

Before adjusting the audio level of the front microphone, confirm that no cables are connected to the AUDIO IN CH1/CH2 connectors. Alternatively, set the REAR XLR AUTO item to OFF on the AUDIO-1 page of the MAINTENANCE menu.



1 Set either or both of the AUDIO IN switch(es) to FRONT.

2 Set the AUDIO SELECT switch(es) for the desired channel(s) selected in step 1 to MANUAL.

3 Turn the MIC LEVEL control, and adjust so that the audio level meter shows up to –20 dB for a normal input volume.

Correspondence between recording level adjustments and audio level controls

On the AUDIO-3 page of the MAINTENANCE menu, you can select which audio level control controls the audio recording level of the front microphone input. The correspondences between the settings of the menu items and the controls are as follows.

MIC CH1 LEVEL: Audio recording level of channel 1

Setting	Control
SIDE1	LEVEL (CH-1) control (on the left)
FRONT	MIC LEVEL control
F+S1	LEVEL (CH-1) control linked with MIC LEVEL control.

MIC CH2 LEVEL: Audio recording level of channel 2

Setting	Control
SIDE2	LEVEL (CH-2) control (on the right)
FRONT	MIC LEVEL control
F+S2	LEVEL (CH-2) control linked with MIC LEVEL control.

Note

When you have operation of the MIC LEVEL control and LEVEL (CH-1/CH-2) controls linked together, if the LEVEL (CH-1/CH-2) controls are set to 0, the audio signals on channels 1 and 2 cannot be recorded. Check the position of the LEVEL (CH-1/CH-2) controls before adjusting the MIC LEVEL control.

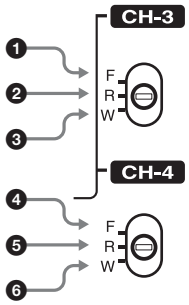
Recording audio on channels 3 and 4

Selecting the recorded audio

You can select the audio recorded on audio channels 3 and 4 with the AUDIO IN CH-3/CH-4 switches, or you can have the selection made automatically, as follows.

To automatically select the same audio as on channels 1 and 2

On the AUDIO-1 page of the MAINTENANCE menu, set the AUDIO CH3/4 MODE item to “CH 1/2”.



CH-3 switch

❶ **F:** The audio signal from the front microphone is recorded.
❷ **R:** The audio signal input to the AUDIO IN CH1 connector is recorded.
❸ **W:** The audio signal of the wireless microphone is recorded.

CH-4 switch

❹ **F:** Same as with the CH3 switch.
❺ **R:** The audio signal input to the AUDIO IN CH2 connector is recorded.
❻ **W:** Same as with the CH3 switch.

Note

When the LINE / AES/EBU / MIC selector is set to LINE or MIC, the audio signals recorded on audio channels 3 and 4 are not affected by the XLR automatic detection function. They are determined by the settings of the AUDIO IN CH-3 and CH-4 switches.

Adjusting the audio recording levels

To adjust automatically

Set AU CH34 AGC MODE on the AUDIO-2 page of the MAINTENANCE menu to STREO or MONO.

To adjust manually

1 Set AU CH34 AGC MODE on the AUDIO-2 page of the MAINTENANCE menu to OFF.

2 Set AUDIO CH3 LEVEL (for audio channel 3) and AUDIO CH4 LEVEL (for audio channel 4) on the AUDIO-3 page of the MAINTENANCE menu to FRONT.

The levels of audio channels 3 and 4 can now be adjusted with the MIC LEVEL control.

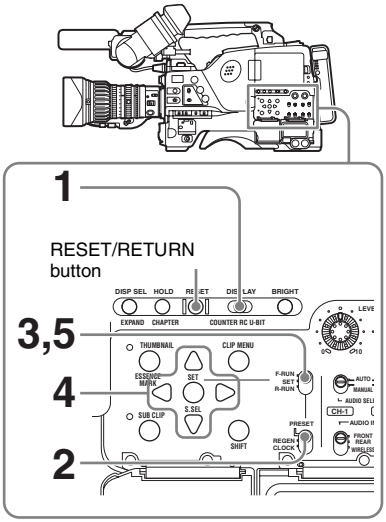
To set to a fixed value

In step **2** of the previous procedure “To adjust manually”, set the menu items to FIX.

Setting Time Data

Setting the timecode

The timecode setting range is from 00 : 00 : 00 : 00 to 23 : 59 : 59 : 29 (hours : minutes : seconds : frames).



1 Press DISP SEL to set the LCD screen to the status display.

2 Set the PRESET/REGEN/CLOCK switch to PRESET.

3 Set the F-RUN/SET/R-RUN switch to SET.
The first (leftmost) digit of timecode flashes.

4 Use the up and down arrow buttons to change values, and use the left and right arrow buttons to move the flashing digit. Repeat until all digits are set.

To reset the timecode value to 00 00 00 00
Press the RESET/RETURN button.

5 Set the F-RUN/SET/R-RUN switch to F-RUN or R-RUN.
F-RUN: Free run. The timecode generator keeps running.
R-RUN: Recording run. The timecode generator runs only while recording.

To set the drop frame mode/non-drop frame mode

You can select the drop frame (DF) mode or non-drop frame (NDF) mode on the TIMECODE page of the MAINTENANCE menu.

To make the timecode consecutive

When the F-RUN/SET/R-RUN switch is set to R-RUN, recording a number of scenes on the disc normally produces consecutive timecode. However, once you remove the disc and record on another disc, the timecode will no longer be consecutive when you use the original disc again for recording.
In this case, to make the timecode consecutive, set the PRESET/REGEN/CLOCK switch to REGEN.

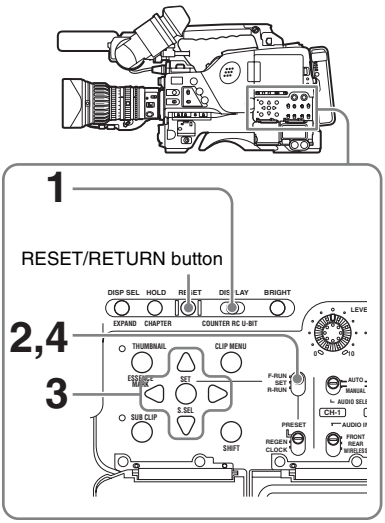
Saving the real Time in the Timecode

Setting the PRESET/REGEN/CLOCK switch to CLOCK saves the real time in the timecode. When it is necessary to set the actual time, use the TIME/DATE page of the DIAGNOSIS menu.

For details, see "Setting the Date/Time of the Internal Clock" (page 38).

Setting the user bits

By setting the user bits (up to 8 hexadecimal digits), you can record user information such as the date, time, or scene number on the timecode track.



1 Set the DISPLAY switch to U-BIT.

2 Set the F-RUN/SET/R-RUN switch to SET.
The first (leftmost) digit flashes.

3 Use the up and down arrow buttons to change values, and use the left and right arrow buttons to move the flashing digit. Repeat until all digits are set.

To reset the user bit data to 00 00 00 00
Press the RESET/RETURN button.

4 Set the F-RUN/SET/R-RUN switch to F-RUN or R-RUN, corresponding to the desired operating mode for the timecode generator.
The set user bit data will be recorded for both LTC and VITC.

To store the user bit setting in memory
The user bit setting (apart from the real time) is automatically retained in memory even when the power is turned off.

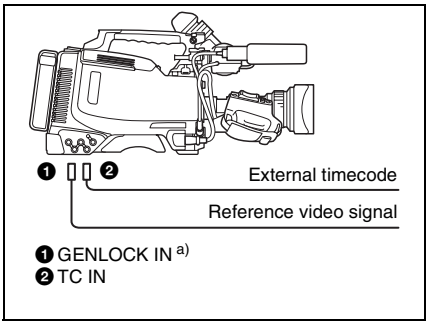
Synchronizing the timecode

You can synchronize the internal timecode generator of this camcorder with an external generator for the regeneration of an external timecode. You can also synchronize the timecode generators of other camcorders/VTRs with the internal generator of this camcorder.

Connections for timecode synchronization

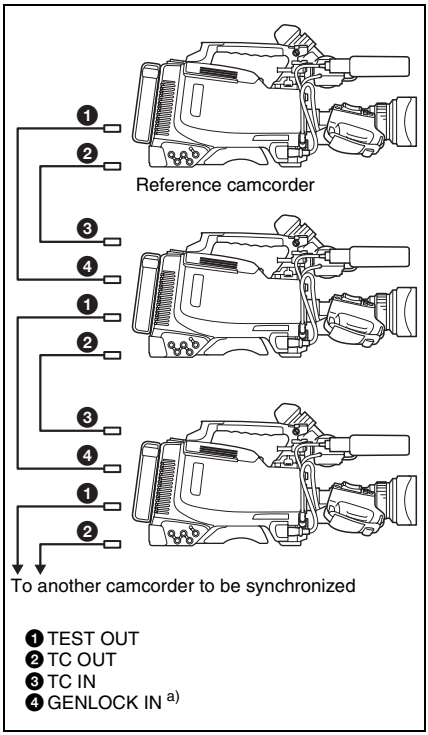
Connect both the reference video signal and the external timecode as illustrated below.

Example 1: Synchronizing with an external timecode



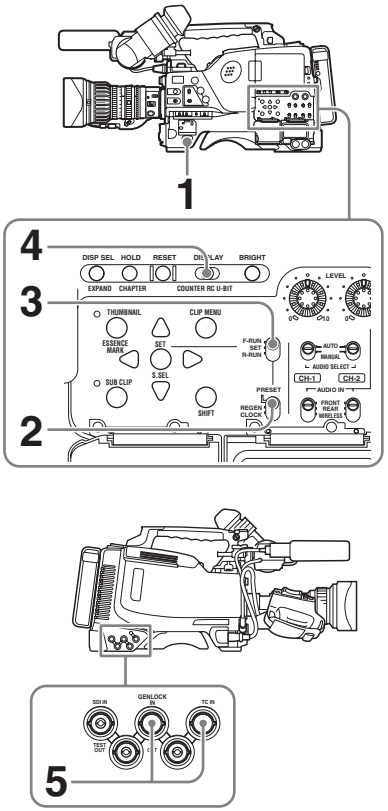
a) Set GENLOCK to ON on the GENLOCK page of the MAINTENANCE menu, if GENLOCK is set to OFF.

Example 2: Interconnecting a number of camcorders or timecode synchronization



a) Set GENLOCK to ON on the GENLOCK page of the MAINTENANCE menu, if GENLOCK is set to OFF.

To lock the timecode to an external source



1 Turn on the POWER switch.

2 Set the PRESET/REGEN/CLOCK switch to PRESET.

3 Set the F-RUN/SET/R-RUN switch to F-RUN.

4 Set the DISPLAY switch to TC.

5 Supply a timecode signal and a reference video signal complying with the SMPTE standard and in proper phase relationship, to the TC IN connector and to the GENLOCK IN connector, respectively.

This operation synchronizes the internal timecode generator with the external timecode. After about 10 seconds, you can disconnect the external timecode without losing the synchronization. However, there will be noise on the recorded image if you connect or disconnect the timecode signal during recording.

Notes

- When you finish the above procedure, the internal timecode is immediately synchronized with the external timecode and the counter display will show the value of the external timecode. However, wait for a few seconds until the sync generator stabilizes before recording.
- If the frequency of the reference video signal is not the same as the system frequency of the camcorder, the camera cannot be correctly genlocked. In such a case, the internal timecode is not correctly synchronized with the external timecode.
- When the GENLOCK ON/OFF item is set to OFF on the GENLOCK page of the MAINTENANCE menu, the timecode cannot be synchronized with the reference video signal. In this case, set the GENLOCK item to ON on the GENLOCK page of the MAINTENANCE menu.

User bit settings during timecode synchronization

When the timecode is synchronized, only the time data is synchronized with the external timecode value. Therefore, each camcorder can have its own user bit settings.
You can lock the users bits of this camcorder to the user bits of external timecode by setting EXT-LK UBIT in the TIMECODE page of the MAINTENANCE menu to EXT.

To release the timecode synchronization

First disconnect the external timecode, then set the F-RUN/SET/R-RUN switch to R-RUN.

To change the power supply from the battery pack to an external power supply during timecode synchronization

To maintain a continuous power supply, connect the external power supply to the DC IN connector before removing the battery pack. You may lose timecode synchronization if you remove the battery pack first.

Camera synchronization during timecode synchronization

During timecode synchronization, the camera is genlocked to the reference video signal input from the GENLOCK IN connector.

Chapter 4 Shooting

Handling Discs

Discs used for recording and playback

The following Professional Discs [1)] can be used for recording and playback on this unit:

- PFD23A (capacity 23.3 GB)
- PFD50DLA (capacity 50.0 GB)

1) Professional Disc is a trademark of Sony Corporation.

Notes

- It is not possible to use the following discs for recording or playback on this unit:
  - Blu-ray Disc
  - Professional Disc for Data
- PFD50DLA discs can be used only by XDCAM devices with the DL mark (see the following illustration). They cannot be used by XDCAM devices without this mark.
- Recording to disc and playback are not supported when connected to an optional CA-FA70/TX70 Camera Adaptor. In this case, eject the disc beforehand.

Notes on handling

Handling

The Professional Disc is housed in a cartridge, and is designed to allow handling free of risk from dust or fingerprints. However, if the cartridge is subjected to a severe shock, for example by dropping it, this can result in damage or scratching of the disc. If the disc is scratched, it may be impossible to record video/audio, or to play back the content recorded on the disc. The discs should be handled and stored carefully.

- Do not touch the surface of the disc itself within the cartridge.
- Deliberately opening the shutter may cause damage.
- Do not disassemble the cartridge.
- The supplied adhesive labels are recommended for indexing discs. Apply the label in the correct position.

Storage

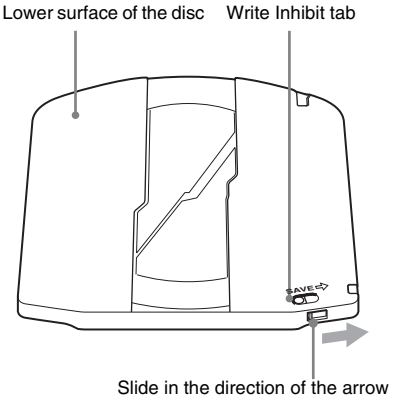
- Do not store discs where they may be subjected to direct sunlight, or in other places where the temperature or humidity is high.
- Do not leave cartridges where dust may be able to gain ingress.
- Store cartridges in their cases.

Care of the discs

- Remove dust and dirt on the outside of a cartridge using a soft dry cloth.
- If condensation forms, allow ample time to dry before use.

Write-protecting discs

To protect the content recorded on the disc from accidental erasure, move the Write Inhibit tab on the lower surface of the disc in the direction of the arrow, as shown in the following figure.



Write Inhibit tab settings

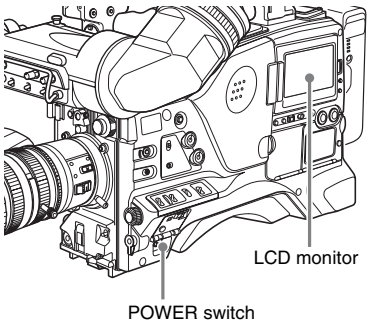
Recording enabled Recording disabled

You can also write protect-individual clips. For details, see "Locking (write-protecting) clips" (page 122).

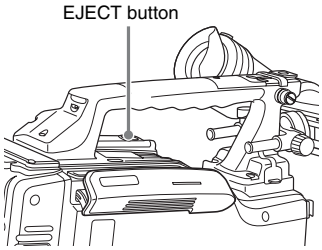
Loading and unloading a disc

To load a disc

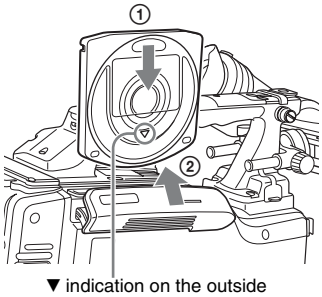
1 Turn on the POWER switch.



2 Press the EJECT button.
This opens the lid of the disc compartment.



3 ① Insert the disc in the ▼ direction, and ② close the disc compartment lid manually.



The disc is loaded.

Note

To insert the disc correctly, make sure that the camcorder is in the upright position (the grip upside, the bottom downside).

To unload a disc

With the power supply on, press the EJECT button to open the disc compartment lid and eject the disc, then remove the disc. If you are not going to insert another disc, close the disc compartment lid.

To unload a disc when the power supply is off

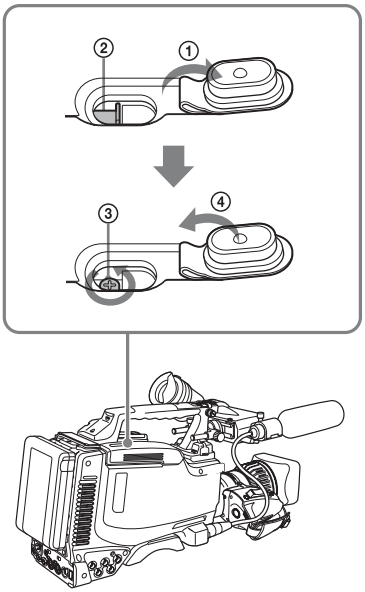
If the battery is exhausted, it is not possible to remove the disc by pressing the EJECT button. In such cases, use the following emergency procedure to remove the disc manually.

1 Turn off the POWER switch.

2 Carry out the operation shown in the following figure.

① Open this rubber cover.

② Using a screwdriver or similar implement, slide the black metal plate visible inside, in the direction of the rear of the camcorder.
The disc compartment lid opens. A red Phillips screw is visible inside the rubber cap.
③ Use a Phillips screwdriver to turn the screw counterclockwise (the direction shown on the rubber cap).
This ejects the disc.
④ Close the rubber cover firmly.



You need not return the screw to its original position after taking out the disc. Turning on the power makes the disc compartment mechanism operable again.

Note

Do not touch the disc or try to forcibly remove it until it has been completely ejected.

Formatting a disc

When using a new disc

An unused disc requires no formatting operation. The disc is automatically formatted so that it is ready to use when loaded into this unit.

To format a disc on which material is recorded

See page 134 for details of formatting a disc.

Note

When a recorded disc is formatted, all the data on the disc is erased. (Even locked clips *(see page 122)* are also erased.)

Handling of discs when recording does not end normally (salvage function)

Recording processing does not end normally if, for example, the battery pack is removed during recording, or if the power cord is disconnected during recording. Because the file system is not updated, video and audio data recorded in real time is not recognized as files and clip contents recorded up to that point are lost.
However, this unit has a salvage function which can hold losses to the minimum by reconstructing clips on such discs.
Note that no recorded clip contents are lost when the POWER switch is set to OFF and when battery exhaustion is detected, because the unit does not become powered off until after the end of recording processing.

Notes

- Do not disconnect the battery pack or power cord until recording processing has finished and the ACCESS indicator has gone out.
- This function salvages as much recorded material as possible after an unforeseen accident, but 100% restoration cannot be guaranteed.
- Even when this function is used, it is not possible to recover data from immediately before the interruption of recording. The amount of data lost is as follows.
  - **Quick salvage:** From 2 to 5 seconds of data before the interruption of recording.
  - **Full salvage:** From 3 to 6 seconds of data before the interruption of recording.

  (More data may be lost when the unit is subject to vibrations, when you switch frequently between recording and paused, and when you use functions such as Picture Cash.)

Quick salvage

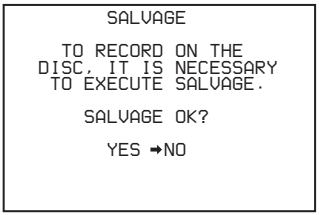
When the unit is powered on again after a recording interruption due to a power interruption, with the disc still loaded in the unit, clips are reconstructed on the basis of backup data stored in nonvolatile memory and markers recorded on the disc. Processing time is about 5 seconds.

Full salvage

When recording on an XDCAM device is interrupted because of a power interruption, and a disc is manually ejected from that device with the power off, clips are reconstructed on the basis of markers recorded on the disc when the disc is loaded in this unit. Therefore, processing takes longer than for a quick salvage (about 30 seconds, although it depends on the state of the disc). Proceed as follows to perform a full salvage.

1 Insert the disc on which recording did not end normally.

The following salvage message appears.



2 Turn the MENU knob to move ➡ to "YES", and press the MENU knob.

Salvage processing starts, and the message "EXECUTING" appears.

A results message appears when the processing finishes.

- If the salvage succeeded, the message "COMPLETED" appears.
- If the salvage failed, the message "INCOMPLETED" appears. Clips for which recording did not end normally are lost.

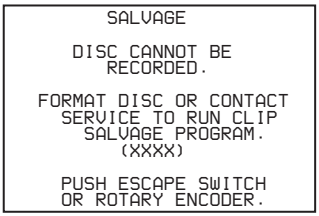
To exit without salvaging

Select NO in step **1** to exit without performing salvage processing.

However, the status of the disc does not change. Salvage is still required to recover the clips for which recording did not end normally. The salvage message will appear again when that disc is inserted again, or when the camcorder is powered on again.

Notes

- If salvage processing is not done, sections which were recorded normally can be played back, but no new recording can be done on the disc.
- Full salvage of discs recorded by this camcorder can be performed with the PDW-F1600, PDW-HD1500, PDW-F800, PDW-700, PDW-740, or PDW-HR1. Full salvage cannot be performed with any other XDCAM device. The following message may appear when you insert a disc that was not recorded normally. The "XXXX" in the message is a code for XDCAM devices that can salvage the disc. Refer to the table below and use one of the indicated devices to salvage the disc.


SALVAGE
DISC CANNOT BE RECORDED.
FORMAT DISC OR CONTACT SERVICE TO RUN CLIP SALVAGE PROGRAM. (XXXX)
PUSH ESCAPE SWITCH OR ROTARY ENCODER.

Code (XXXX)	Model name
0002	PDW-1500/530/510/R1 PDW-F70/F350/F330
0200	PDW-F70/F350/F330 (Version 1.9 or higher) PDW-F75/F355/F335
0300 a)	PDW-HD1500/HR1/700/740
0301 a)	PDW-HD1500/700/740 (Version 1.5 or higher) PDW-F1600/F800

a) Does not appear on this unit.

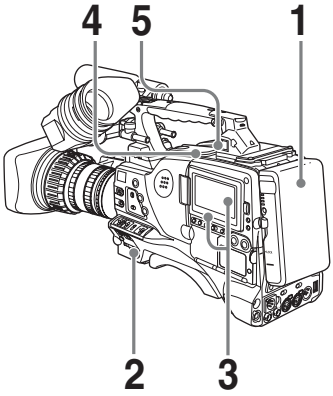
To cancel the message and return to normal operation, exchange the disc for a usable disc and flick the CANCEL/PRST/ESCAPE switch to the ESCAPE side, or press the MENU knob.

Basic Procedure for Shooting

This section describes the basic procedures for shooting and recording.
Before a shooting session, ensure that the camcorder is functioning properly.

For details, see "Testing the Camcorder before Shooting" (page 239).

Basic procedure for shooting: from power supply to disc loading



1 Attach a fully charged battery pack.

For details, see "Preparing a Power Supply" (page 33).

2 Set the POWER switch to ON.

3 Press the DISP SEL/EXPAND button to switch the LCD monitor to status display, and check that the following condition is met.

The battery status indicator shows at least five segments (■).
If it does not, replace the battery pack with a fully charged one.

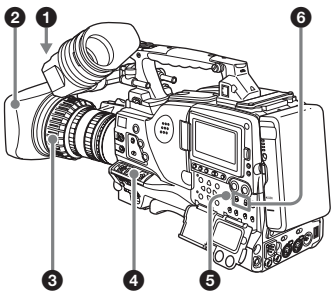
4 Check that there are no obstructions such as cables near the disc compartment lid. Then press the EJECT button to open the disc compartment lid.

5 After checking that the disc is not write-protected *(see page 71)*, load it and close the disc compartment lid.

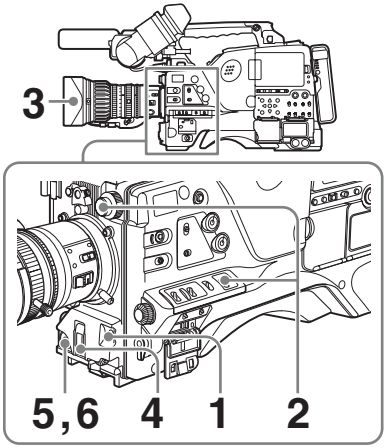
Basic procedure for shooting: from adjusting the black balance and white balance to stopping recording

Switch settings

After turning on the power and loading a disc, set the switches and selectors as shown below and begin operation.



❶ DISPLAY: ON
❷ Iris: Automatic
❸ Zoom: Automatic
❹ OUTPUT/DCC: CAM, DCC: ON
❺ F-RUN/SET/R-RUN: F-RUN or R-RUN (set as needed)
❻ AUDIO SELECT CH-1/CH-2: AUTO



1 Flick the AUTO W/B BAL switch to BLK to adjust the black balance.

For details of black balance adjustment, see page 53.

2 Select the CC filter and ND filter to match the lighting conditions, and adjust the white balance.

For details, see "Adjusting the white balance" (page 55).

3 Aim the camera at the subject and adjust the focus and zoom.

You can adjust the focus by using the Focus Assist function *(see page 79)*.

4 If necessary, set the electronic shutter for an appropriate mode and speed.

For details, see "Setting the Electronic Shutter" (page 58).

5 To start recording, press the REC START button or the VTR button on the lens.

If the recording start/stop function is assigned to one of the ASSIGN 1/3/4/5 switches or RET button on the lens, you can also use this switch.

On how to assign functions to the ASSIGN switches, see page 208.

During recording, the REC indicator lights in the viewfinder. Perform zooming and focus control, if necessary.

Note

During recording (while the ACCESS indicator is lit) do not remove the battery pack. If you do, the internal processing for recording may not finish properly, which may cause the last few seconds of recording to be lost.

For details, see "Handling of discs when recording does not end normally (salvage function)" (page 73).

6 To stop recording, press the REC START button or the VTR button on the lens again.

The REC indicator in the viewfinder goes off.

The material recorded from step **5** to step **6** is saved as a single clip.

To check the last two seconds of the recording (recording review)

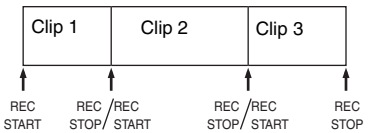
If you press the RET button on the lens while recording is paused, the last two seconds of the recording is played back. If you hold down the RET button, a low-speed reverse search begins at a position two seconds before the recording end position. When you release the RET button, the reverse search stops and playback in the forward direction begins. After playback, the camcorder is ready to start recording again.

By assigning the same function as that of the RET button on the lens to the ASSIGN 1/3/4/5 switch, you can use the switch in the same way as the lens RET button.

On how to assign functions to the ASSIGN switches, see page 208.

7 Repeat steps 5 and 6 as required for shooting.

Each time you repeat steps **5** and **6**, successive clips are recorded on the disc.



Notes

- It is not possible to record a clip shorter than 2 seconds. If you stop recording within 2 seconds of starting, this results in a 2-second clip. If recording is started, immediately stopped, and then restarted within 2 seconds of the first recording, two clips will be created.
- The maximum number of clips that can be recorded on a single disc is 300. If an attempt is made to record more than 300 clips, the error message "MAX # Clips" appears, even if there is free capacity on the disc.

Playback control buttons

During recording, the playback control buttons (EJECT, F REV, F FWD, NEXT, PREV, PLAY/PAUSE, STOP) have no effect.

Playing back the recorded clip

Normal playback

By pressing the PLAY/PAUSE button, you can review any length of recording on the viewfinder screen in black and white or in color on the LCD monitor. There are two other ways to review the recording.

Recording review: You can view the last two seconds of the recording on the viewfinder screen in black and white or in color on the LCD monitor.

Viewing color playback on a video monitor: You can view the recording in color on a color video monitor without the need for any external adaptor.

You can also view playback video during a fast forward or reverse search.

For details about the switches and controls used to select the audio output signal and to adjust the audio level, see page 16 and page 23.

To freeze a picture during playback

The following operation can also be done from the RM-B170 Remote Control Unit.

1 Press the PLAY/PAUSE button to start playback.

2 Press the PLAY/PAUSE button again at the instant when you want to freeze the picture.

The playback pauses and a frozen picture appears.

The timecode of the frozen frame is displayed in the counter display and the PLAY/PAUSE indicator now flashes (one flash/second).

To restart playback

Press the PLAY/PAUSE button once again.

Clip playback modes

You can set the clip playback mode to either of the following.

Continuous playback mode: The playback target is all of the clips on the disc (factory default setting)

Single clip playback mode: The playback target is the currently selected clip only

To select single clip playback mode

Set SINGLE CLIP MODE in the CAM CONFIG 1 page of the MAINTENANCE menu to "ON".

Playback in single clip playback mode

Playback stops when it reaches the start or end of the clip. The next and preceding clips are not played, even if they exist on the disc. The available playback types include normal playback, and high-speed playback in the forward or reverse directions.

To move to another clip, press the PREV, NEXT, F REV + PREV, or F FWD + NEXT button, or perform a thumbnail search.

Disc playback start position

Although this unit uses optical discs, it is designed to offer the most convenient features of tape playback by VTRs. One of these is the playback start position, which works in the same way as with tape, as described below.

After playback stop

The unit stops at the position where the STOP button was pressed.

Press the PLAY/PAUSE button to resume playback at the stop position.

After recording

The unit stops at the position where recording ended.

To play back a clip, press the PREV button to move to the start frame of any clip, or press the F REV button to move to any position.

After disc insertion

The unit stops at the position of the disc when it was most recently ejected.
Press the PLAY/PAUSE button to resume playback at the most recent position.
The playback position is saved to the disc when the disc is ejected, which allows playback to start at that position whenever it is loaded into any XDCAM player.

Note

The playback position is not recorded to the disc if the disc is write-protected.

Deteriorating playback conditions

Deteriorating playback may be due to the following causes.

- Scratches and dust on the disc surface
  This includes fingerprints, dust from the air, tar from cigarette smoke, and so on.
  Scratches and soiling which occur before recording are not a problem because they are registered in advance as defects, and recording avoids them. However, scratches and soiling which occur after recording can lead to deteriorating playback conditions.
- Aging of disc recording layers
  Over several decades, the recording layers of optical discs can age and cause deteriorating playback conditions.
- Deteriorating laser diodes performance
  The performance of the laser diodes used in optical heads can worsen with age, leading to deteriorating playback conditions.

  Refer to the Maintenance Manual for an approximate guide to when it is time to replace optical heads.

To prevent playback conditions from deteriorating

Pay attention to the following points when handling discs.

- Do not open disc cartridges and touch discs directly with your hands.
- Do not store for long periods in locations which are dusty or exposed to air circulated by fans.
- Do not store for long periods under high temperatures or in locations exposed to direct sunlight.

If playback conditions have deteriorated

Read errors occur when playback conditions continue to deteriorate.
When a read error occurs, the message “DISC ERROR!” appears, the video freezes, and the audio output is suppressed.
If this happens, check the following points.

Whether the disc displays the same playback condition on other XDCAM devices: If so, the surface of the disc may be dirty or scratched, or the performance of the recording layers on the disc may have worsened due to age. Do not use discs with these symptoms.

Whether every disc inserted into an XDCAM device displays the same playback conditions: If so, the performance of the laser diodes may have deteriorated. Check the total optical output time.

Deleting the recorded clip

For details, see “Deleting clips” (page 123).

Using the Freeze Mix function

The Freeze Mix function allows you to display a freeze image over the current shooting video. For example, you can use this function to frame summer and winter shots of a landscape scene in exactly the same way, or to resume an interrupted shooting session with exactly the same framing.
To use the Freeze Mix function, you need to assign it to an ASSIGN 1/3/4/5 switch.

For details, see “Assigning functions to ASSIGN switches” (page 208)

1 Play the disc that contains the scene you want to use as the framing standard.

2 When the scene that you want appears, press the PLAY/PAUSE button to pause playback.

3 Press the button to which you have assigned the Freeze Mix function.
The playback screen changes to black and white, and a freeze image appears over the current shooting video.

To change the standard image
Use the PLAY/PAUSE button, the F REV and F FWD buttons and other controls to find another image, and repeat step **2**.

4 Align the framing of the playback image and the shooting video.

5 Press the button to which you have assigned the Freeze Mix function once more.
The unit exits Freeze Mix mode.

6 Start recording.

Note

If you exchange discs before starting to record, be careful to keep the unit from moving.

Using the Focus Assist function

Displaying the focus assist indicator in the viewfinder makes it easier to focus. This is convenient in situations where it may be difficult to focus using only the video in the viewfinder.

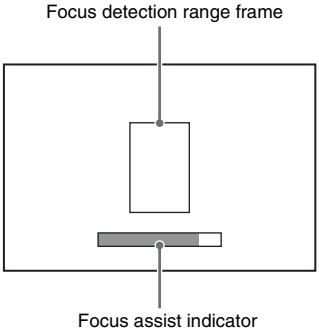
To display the focus assist indicator

1 Display the FOCUS ASSIST page in the OPERATION menu.

See "Basic menu operations" (page 192) for more information about menu operations.

2 Select FOCUS ASSIST IND, and turn the MENU knob until ON appears.
The focus assist indicator appears.

3 Set the following items as required.
FOCUS IND POS: Select the focus assist indicator display position from BOTTM (bottom), LEFT, TOP, and RIGHT.
FOCUS AREA MARK: Turn the display of the frame around the focus detection range OFF (hide) or ON (display).

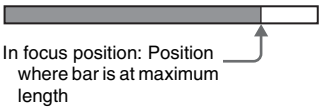


Notes

- The focus assist indicator is not displayed when the gain is set to 18 dB or higher.
- When you display the focus assist indicator, the display of effective pixels (which you select by setting 100% MARKER in the MARKER 1 page of the OPERATION menu to "ON") is hidden.
- When you display the frame of the focus detection range, the box cursor (which you select by setting User Box in the MARKER 2 page of the OPERATION menu to "ON") is hidden.

How to read the focus assist indicator

The "in focus" position is the position where the bar reaches its maximum length. Focus on a subject by rotating the focus ring so that the bar extends to its maximum length.



Note

The focus indicator may show little or no variation when you are shooting a smooth subject or a dark scene.

Advanced Operations for Shooting

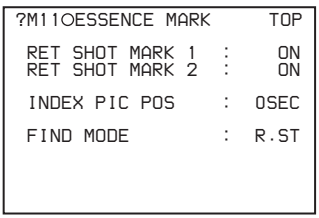
Recording essence marks

Shot marks and other essence marks can be recorded on the disc.
Recording essence marks for scenes containing important images and sounds enables quick access to the marked points. This increases editing efficiency.

To record a shot mark using the RET button on the lens

To make it possible to record shot marks using the RET button on the lens, carry out the following procedure.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the ESSENCE MARK page of the MAINTENANCE menu.



For details on menu operations, see "Basic menu operations" (page 192).

2 Select the essence mark to be recorded, and press the MENU knob to display "ON".

3 Repeat the step 2, as necessary.

To record shot mark 1/2

When the camcorder is in recording or playback mode, operate the lens RET button as follows.
Shot mark 1: Press the RET button once.
Shot mark 2: Press the RET button twice in rapid succession.

"ShotMark1" or "ShotMark2" appears in the viewfinder screen for about one second near the timecode display.
If the SHOT MARK 1 or SHOT MARK 2 recording function has been assigned to one of the ASSIGN 1/3/4/5 switches, you can also use that switch to record a SHOT MARK 1 or SHOT MARK 2 essence mark.

On how to assign functions to the ASSIGN switches, see page 208.

If you connect a Windows USB keyboard to the USB connector, you can record shot marks from Shot Mark0 up to Shot Mark9 by pressing the 0 to 9 keys on the numeric keypad.

Setting clip flags with switches

You can set three types of clip flags (OK/NG/KEEP) during recording, immediately after recording, or during playback. Setting these flags in each clip that you record makes it easy for editors and other colleagues to find and select the clips they need.
You can use switches on the unit to set these flags. But before you can do so, you need to assign the corresponding flag functions to the ASSIGN 1/3/4/5 switches or the RET button on the lens *(see page 208)*.

To set a clip flag

During recording, immediately after recording, or during playback (including search and still picture playback), press the button to which the flag function has been assigned. Press the button once at the position where you want to set the flag.
The specified flag is set, and "*** ClpFlg" (***: OK, NG, or KEEP) appears near the timecode display in the viewfinder for about three seconds.

To clear a clip flag

During recording or playback, press the button to which the flag function has been assigned. Press the button twice in rapid succession.
The flag is cleared, and "ClpFlg DEL." appears for about three seconds.

You can also set and clear clip flags from a GUI screen. For details, see "Setting clip flags" (page 122).

Setting the thumbnail image at recording time

When you record a clip, you can specify which frame to use as the clip thumbnail image *(see page 103)*.
(The factory default setting is to use the first frame in the clip as the thumbnail.)
For example, if all clips have the same image in their first frames, you can specify a frame a few seconds after the start of the clip, so that all thumbnails will not show the same image.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the ESSENCE MARK page of the MAINTENANCE menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select INDEX PIC POS, and press the MENU knob.

3 Turn the MENU knob to select the desired time.

4 Press the MENU knob.

Starting a shoot with a few seconds of pre-stored picture data (Picture Cache function)

The camcorder has a large capacity internal memory, in which you can cache the last few seconds (maximum 30 seconds) of captured video and audio, so that recording starts from a point just before you press the REC START button or the VTR button on the lens.

Note

Picture Cache settings cannot be made while this unit is in the following states.
- The Clip Continuous Rec function is enabled.
- The Live Logging function is set to Live View mode.
- During Slow & Quick Motion shooting

Setting the Picture Cache mode/Picture Cache time

To record in Picture Cache mode, you need to turn on Picture Cache mode and set the picture data storage time (Picture Cache time) using the USER menu.
The Picture Cache time determines the number of seconds recorded from the Picture Cache, counting back from the time when you press the REC START button or the VTR button on the lens to start recording. However, the number of seconds actually recorded from the Picture Cache may be shorter immediately after the setting of the VDR SAVE/STBY switch is changed, and in the special situations explained in the following notes.

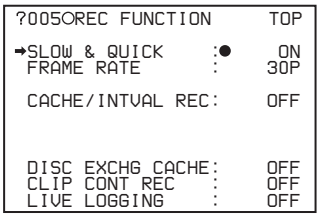
Notes

- Storage of images to memory begins after you select Picture Cache mode. If you begin recording immediately after selecting Picture Cache mode, images from before the selection will not be recorded.
- During playback, recording review or GUI screen operations, no data is saved to the Picture Cache memory. Thus it is not possible to use this function to rerecord the last few seconds of material from playback or recording review.

To set the Picture Cache mode/Picture Cache time

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the REC FUNCTION page of the OPERATION menu.


?005REC FUNCTION TOP
➧SLOW & QUICK :● ON
FRAME RATE : 30P
CACHE/INTVAL REC: OFF
DISC EXCHG CACHE: OFF
CLIP CONT REC : OFF
LIVE LOGGING : OFF

For details on menu operations, see "Basic menu operations" (page 192).

2 Select CACHE REC, and turn the MENU knob to display CACHE.

3 Select CACHE REC TIME, and turn the MENU knob to display the desired Picture Cache time.

As you turn the MENU knob, the Picture Cache time changes as follows: 0-2s ⟷ 2-4s ⟷ 4-6s ⟷ 6-8s ⟷ 8-10s ⟷ 18-20s ⟷ 28-30s.

The Picture Cache mode settings once made continue to be effective until changed.
You can assign the Picture Cache on/off function to one of the ASSIGN 1/2/3/4/5 switches or RET button on the lens.

For details, see "Assigning functions to ASSIGN switches" (page 208).

Notes

- You can do a menu operation to change the Picture Cache time while the camcorder is in recording mode. However, the new setting takes effect only after the recording is finished.
- In Picture Cache mode, the internal timecode generator operating mode is always F-RUN regardless of the setting of the F-RUN/SET/R-RUN switch.

Camcorder operations in Picture Cache mode

The recording procedure in Picture Cache mode is basically the same as that for normal recording. However, note the following differences.

- When you record in Picture Cache mode, the picture you are shooting now is recorded to disc after the picture data stored in memory (equal to the Picture Cache time) is recorded to disc. For this reason, disc access may continue for a short time after you press the REC START button to stop recording. During this time, the playback control buttons are disabled, as in recording mode. Also, if you press the REC START button or the VTR button on the lens to restart recording during this time, a separate clip is recorded.
- When you press the REC START button or the VTR button on the lens to restart recording during disc access, the start point of the recorded clip may be later than the Picture Cache time, especially when there are a large number of clips recorded on the disc. In Picture Cache mode, you should avoid stop and start recording operations in quick succession.
- The time disc access stops after the REC START button is pressed equals the Picture Cache time. However, if you start recording within the Picture Cache time immediately after selecting Picture Cache mode, changing the Picture Cache time or performing playback or recording review, the picture data for the duration of the Picture Cache time will not be stored in memory. Thus, the time disc access stops after the STOP button is pressed becomes shorter than the Picture Cache time.
- In Picture Cache mode, you cannot set the F-RUN/SET/R-RUN switch to SET to make timecode settings. To make timecode settings, first exit Picture Cache mode.

When power is lost during recording in Picture Cache mode

- If the POWER switch is turned off during recording in Picture Cache mode, the camcorder gets powered off after disc access has continued for a few seconds so that the picture at the moment when the POWER switch is turned off is recorded.
- If you remove the battery, pull out the DC cable, or cut power to the AC adaptor during recording in Picture Cache mode, video and audio stored in memory will be lost without being recorded to the disc. For this reason, make sure you do not replace the battery while recording.

Time-lapse video (Interval Rec function)

Using the memory in the camcorder, you can capture time-lapse video. There are two modes for this function, which is known as "Interval Rec".

Auto Interval Rec mode: In Auto Interval Rec mode, pictures are automatically shot a frame (two frames when the recording format is set to 720p) at a time at the specified interval and stored in memory. To use this function, you must set the total time for shooting (TAKE TOTAL TIME) and the length of time for recording on the disc (REC TIME).

Manual Interval Rec mode: A specified number of frames (NUMBER OF FRAME) is recorded when you press the REC START button or the lens VTR button.
There are two Manual Interval Rec modes: a single shot mode in which recording is done once with each press of the button, and a consecutive mode in which recording is done repeatedly at a specified interval after the button is pressed.

A pre-lighting function is available in Auto Interval Rec mode and the consecutive mode of Manual Interval Rec mode. This function automatically turns on the light before recording starts, which allows you to record pictures under stable light and color temperature conditions.

Note

Interval Rec settings cannot be made while this unit is in the following states.

- The Disc Exchange Cache function is enabled.
- The Clip Continuous Rec function is enabled.
- The Live Logging function is set to Live View mode.
- During Slow & Quick Motion shooting

Operation limitations during recording

Item	Description
Time code	The internal time code generator runs in R-RUN mode regardless of how the F-RUN/SET/R-RUN switch is set.
Audio signals	Not recorded.
Playback control buttons	• **Auto Interval Rec mode and the consecutive mode of Manual Interval Rec mode** The EJECT, F REV, F FWD, NEXT, PREV, PLAY/PAUSE and STOP buttons are disabled. To use these buttons, stop recording by pressing the REC START button or the VTR button on the lens. • **The single shot mode of Manual Interval Rec mode** The F REV, F FWD, NEXT, PREV, PLAY/PAUSE, and STOP buttons are disabled. To use these buttons, exit the Interval Rec mode by pressing the EJECT button.
Menu operations	The settings of the Interval Rec-related items on the REC FUNCTION page of the OPERATION menu cannot be changed. To change the settings, do either of the following. • **Auto Interval Rec mode and the consecutive mode of Manual Interval Rec mode** Stop recording by pressing the REC START button or the VTR button on the lens. • **The single shot mode of Manual Interval Rec mode** Exit the Interval Rec mode by pressing the EJECT button.
When the camcorder power is switched off	• When you set the POWER switch to OFF, the camcorder will switch off by itself after disc access has continued for a few seconds to record the picture data stored in memory. • If you remove the battery, unplug the DC cable, or cut power to the AC adaptor, picture data stored before recording stops (a maximum of ten seconds) may be lost. Take care when replacing the battery.

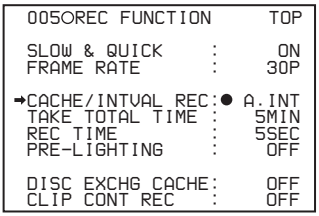
Auto Interval Rec mode settings and shooting

To make settings

1 Display the REC FUNCTION page of the OPERATION menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select CACHE/INTVAL REC, and turn the MENU knob to display "A.INT".


005OREC FUNCTION TOP
SLOW & QUICK : ON
FRAME RATE : 30P
➡CACHE/INTVAL REC : ● A.INT
TAKE TOTAL TIME : 5MIN
REC TIME : 5SEC
PRE-LIGHTING : OFF
DISC EXCHG CACHE : OFF
CLIP CONT REC : OFF

As you turn the MENU knob, the setting changes as follows: OFF ⟷ CACHE ⟷ A.INT ⟷ M.INT.

3 Select TAKE TOTAL TIME, and turn the MENU knob to select the desired total time for shooting.

As you turn the MENU knob, the setting changes as follows: 5MIN ⟷ 10MIN ⟷ 15MIN ⟷ 20MIN ⟷ 30MIN ⟷ 40MIN ⟷ 50MIN ⟷ 1H ⟷ 2H ⟷ 3H ⟷ 4H ⟷ 5H ⟷ 7H ⟷ 10H ⟷ 15H ⟷ 20H ⟷ 30H ⟷ 40H ⟷ 50H ⟷ 70H ⟷ 100H.

Here MIN means minutes (5MIN is 5 minutes) and H means hours (1H is one hour).

4 Select REC TIME, and turn the MENU knob to select the desired time to be recorded on the disc.

As you turn the MENU knob, the setting changes as follows: 5SEC ⟷ 10SEC ⟷ 15SEC ⟷ 20SEC ⟷ 30SEC ⟷ 40SEC ⟷ 50SEC ⟷ 1MIN ... 85MIN.

Here SEC means seconds (5SEC is 5 seconds) and MIN means minutes (1MIN is one minute).

You cannot set a REC TIME that is more than one thirtieth of TAKE TOTAL TIME. The setting value changes within the range that can be set.

For example: When TAKE TOTAL TIME is set to 1H, the maximum value of REC TIME is 2 MIN. (60 minutes divided by 30 gives 2 minutes.)

5 As required, select PRE-LIGHTING, and turn the MENU knob to select the lighting on-time before recording starts.

As you turn the MENU knob, the setting changes as follows: OFF ⟷ 2SEC ⟷ 5SEC ⟷ 10SEC.

Note

Set the LIGHT switch on the camcorder to AUTO to turn on the light before recording. The light switch must also be set to ON. With these settings, the light turns on and off automatically. However, the light remains on continuously if the off time is 5 seconds or less.

When the LIGHT switch is set to MANUAL and the light switch is set to ON, the light remains on continuously. (The light does not turn on and off automatically.)

When the setting is completed, the message "AUTO INTERVAL **M**S" appears along the bottom of the viewfinder screen. "**M**S" indicates the shooting interval.

For example, the message "AUTO INTERVAL 00M04S" indicates that the shooting interval is four seconds.

The camcorder exits Auto Interval Rec mode whenever it is powered off. However, the TAKE TOTAL TIME, REC TIME, and PRE-LIGHTING settings are maintained. You do not need to set them again the next time you use Auto Interval Rec mode.

To shoot and record

1 After performing the basic procedures for shooting and recording, following the instructions in "Basic Procedure for Shooting" (page 75), secure the camcorder so that it will not move.

2 Press the REC START button or the VTR button on the lens.

The camcorder starts recording in Auto Interval Rec mode. When you use the PRE-LIGHTING function, recording starts after the light is switched on.

The actual recording to disc begins when the camcorder has saved about ten seconds of video in memory, so disc access is intermittent.

While recording in Auto Interval Rec mode, the TALLY (green tally) indicator in the viewfinder flashes (4 flashes/second) and the message "AUTO INTERVAL **M**S" flashes on the viewfinder screen.

When the camcorder is capturing the picture in memory, the REC (recording, red tally) indicator in the viewfinder lights.

After the length of time for recording on the disc (REC TIME) has elapsed, the camcorder automatically stops recording.

To interrupt shooting

Press the REC START button or the VTR button on the lens.

Disc access may occur for recording picture data already stored in memory.

To continue shooting

Press the REC START button or the VTR button on the lens again.

To exit Auto Interval Rec mode

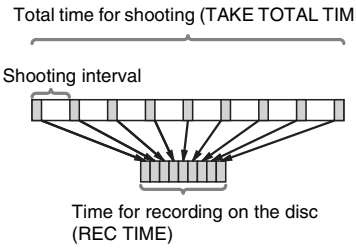
Do either of the following.

- Set the POWER switch to OFF.
- Set CACHE/INTVAL REC to OFF on the REC FUNCTION page of the OPERATION menu.

Time required for shooting and time required for recording on the disc

Auto Interval Rec mode is effective for shooting objects that move very slowly. To use this function, you need to set the total time for shooting (TAKE TOTAL TIME) and the length of time for recording on the disc (REC TIME). The time required for shooting is the time required to capture the very slowly moving

subject, and the camcorder must be arranged so that during this time the subject is always in the frame.
The disc recording time indicates the running time of the completed recording. The camcorder calculates the time-lapse interval from these two times.



Manual Interval Rec mode settings and shooting

Manual Interval Rec has the following two modes.

Single shot mode: Each time the REC START button or VTR button on the lens is pressed, the camcorder captures to memory a single shot consisting of the specified number of video frames.

Consecutive mode: Once the REC START button or VTR button on the lens is pressed, the camcorder captures consecutive shots to memory at the specified interval, with each shot consisting of the specified number of video frames.

To make settings

1 Display the REC FUNCTION page of the OPERATION menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select CACHE/INTVAL REC, and turn the MENU knob to display "M.INT".

```
 005OREC FUNCTION       TOP

 SLOW & QUICK     :      ON
 FRAME RATE       :     30P

➡CACHE/INTVAL REC:● M.INT
 NUMBER OF FRAME  :       1
 TRIGGER INTERVAL :       M

 DISC EXCHG CACHE :     OFF
 CLIP CONT REC    :     OFF
 LIVE LOGGING     :     OFF
```

As you turn the MENU knob, the setting changes as follows: OFF ⟷ CACHE ⟷ A.INT ⟷ M.INT.
When M. INT appears, the camcorder is in Manual Interval Rec mode and the TALLY (green tally) indicator in the viewfinder flashes.

3 Select NUMBER OF FRAME, and turn the MENU knob to select the desired number of frames to be recorded in each shot.

As you turn the MENU knob, the setting changes as follows: 1 ⟷ 3 ⟷ 6 (when SYSTEM LINE is set to 720 and REC FORMAT is set to HD422 50, HD420 HQ, or HD420 SP: 2 ⟷ 6 ⟷ 12).

4 Select TRIGGER INTERVAL, and turn the MENU knob to select the desired trigger mode or length of interval.

As you turn the MENU knob, the setting changes as follows: M ⟷ 1SEC ⟷ 2SEC ⟷ 3SEC ⟷ 4SEC ⟷ 5SEC ⟷ 6SEC ⟷ 7SEC ⟷ 8SEC ⟷ 9SEC ⟷ 10SEC ⟷ 15SEC ⟷ 20SEC ⟷ 30SEC ⟷ 40SEC ⟷ 50SEC ⟷ 1MIN ⟷ 2MIN ⟷ 3MIN ⟷ 4MIN ⟷ 5MIN ⟷ 6MIN ⟷ 7MIN ⟷ 8MIN ⟷ 9MIN ⟷ 10MIN ⟷ 15MIN ⟷ 20MIN ⟷ 30MIN ⟷ 40MIN ⟷ 50MIN ⟷ 1H ⟷ 2H ⟷ 3H ⟷ 4H ⟷ 6H ⟷ 12H ⟷ 24H.
Here SEC means seconds (5SEC is 5 seconds) and MIN means minutes (1MIN is one minute).

M: The single shot mode (recording only one shot after one operation). In the viewfinder, the TALLY (green tally) indicator flashes twice per second.

A setting value other than "M": The consecutive mode (recording shots repeatedly after one operation). In the

viewfinder, the TALLY (green tally) indicator flashes four times per second.

5 When a setting value other than "M" (the consecutive mode) is selected in step 4, select PRE-LIGHTING, and turn the MENU knob to select the lighting on-time before recording starts as required.

As you turn the MENU knob, the setting changes as follows: OFF ⟷ 2SEC ⟷ 5SEC ⟷ 10SEC.

Note

Set the LIGHT switch on the camcorder to AUTO to turn on the light before recording. The light switch must also be set to ON. With these settings, the light turns on and off automatically. However, the light remains on continuously if the off time is 5 seconds or less.

When the LIGHT switch is set to MANUAL and the light switch is set to ON, the light remains on continuously. (The light does not turn on and off automatically.)

When the setting is completed, the following message appears along the bottom of the viewfinder screen.

In single shot mode: MANU INTERVAL * FRAME

In consecutive mode: INTERVAL * SEC (MIN/H) * FRAME

"* SEC", "* MIN", and "* H" indicate the length of interval and "* FRAME" indicates the number of frames.

The camcorder exits Manual Interval Rec mode whenever it is powered off. However, the NUMBER OF FRAME, TRIGGER INTERVAL, and PRE-LIGHTING settings are maintained. You do not need to set them again the next time you use Manual Interval Rec mode.

To shoot and record

1 After performing the basic procedures for shooting and recording, following the instructions in "Basic Procedure for Shooting" (page 75), secure the camcorder so that it will not move.

2 Press the REC START button or the VTR button on the lens.

The camcorder starts recording in Manual Interval Rec mode. When you use the PRE-LIGHTING function, recording starts after the light is switched on.

While recording in Manual Interval Rec mode, the TALLY (green tally) indicator in the viewfinder flashes (2 or 4 flashes/second) and the message "MANU INTERVAL (* SEC) * FRAME" flashes on the viewfinder screen.

To exit shooting

Do one of the following.

- In the single shot mode, press the EJECT button.
- In the consecutive mode, press the REC START button or the lens VTR button to stop recording.
- Set the POWER switch to OFF.

After the camcorder has exited from Manual Interval Rec mode, it records picture data stored in memory to the disc.

To exit Manual Interval Rec mode

Do one of the following.

- Set the POWER switch to OFF.
- Set the CACHE/INTVAL REC setting to OFF on the REC FUNCTION page of the OPERATION menu.

Shooting with Slow & Quick Motion

When the recording format is MPEG HD422, 50 Mbps, and the resolution/system frequency is 1080/23.98P, 1080/25P, or 1080/29.97P, you can specify a recording frame rate that is different from the playback frame rate.

By shooting with this function, you can obtain smooth slow motion and fast motion effects.

Notes

- No audio is recorded during Slow & Quick Motion shooting.
- Slow & Quick Motion cannot be enabled when the unit is set up to record external input video. Switch to shooting with the camera *(see page 96)*.
- The following functions are disabled automatically whenever you enable the Slow & Quick Motion function.
  - Picture Cache function
  - Interval Rec function
  - Disc Exchange Cache function
  - Clip Continuous Rec function

- Live Logging function

- When you enable Slow & Quick Motion, limitations apply to the values that can be selected for the following items.
  - Gain value: 0 to 12 dB only
  - Color bar signal: 100% only
- Timecode is recorded as R-RUN during Slow & Quick Motion shooting.
- Lower resolution in the vertical direction may be evident in video recorded at frame rates of 25P or higher (1080/23.98P), 26P or higher (1080/25P), and 31P or higher (1080/29.97P).
- Slow & Quick Motion can be used only with certain settings, including the recording format (MPEG HD422 50 Mbps) and the resolution and system frequency settings (1080/23.98P, 1080/25P, or 1080/29.97P). Slow & Quick Motion is disabled automatically if you change any of these to other settings.

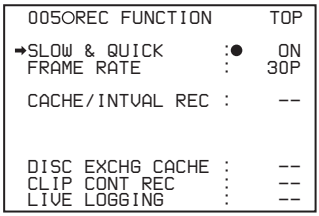
To enable the function

1 Check that you are not recording and that the recording format of this unit is set to MPEG HD422, 50 Mbps, and the resolution/system frequency is set to 1080/23.98P, 1080/25P, or 1080/29.97P.

2 Display the REC FUNCTION page of the OPERATION menu.

See "Basic menu operations" (page 192) for more information about menu operations.

3 Select SLOW & QUICK, and turn the MENU knob until ON appears.



4 Select FRAME RATE, and turn the MENU knob until the desired frame rate appears.

The frame rate setting ranges are as follows.

Recording format	Frame rate
1080/23.98P	1 to 48
1080/25P	1 to 50
1080/29.97P	1 to 60

When you have finished making settings, the system frequency and the frame rate appear at the top of the viewfinder screen. You can change the frame rate with the MENU knob while viewing this display.

Exchanging discs while recording (Disc Exchange Cache function)

Even if you run out of free disc capacity while recording, you can continue recording by using the Disc Exchange Cache function. This function enables seamless recording over extended recording sessions, too long to fit on one disc, by recording to the unit's internal memory while you exchange the disc.

Notes

- Disc Exchange Cache settings cannot be made while this unit is in the following states.
  - The Interval Rec function is enabled.
  - The Clip Continuous Rec function is enabled.
  - The Live Logging function is set to Live View mode.
  - During Slow & Quick Motion shooting
- The unit's internal memory is not unlimited, so the video and audio may be interrupted if it takes too long to exchange the disc.

To enable the Disc Exchange Cache function

1 Display the REC FUNCTION page of the OPERATION menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select DISC EXCHG CACHE, and turn the MENU knob to display "ON".

The TALLY (green tally) indicator lights in the viewfinder.

To exchange discs with the function enabled

When the disc exchange cache function is enabled, the following procedure allows you to exchange discs while continuing to record.

1 Press the REC START button or the VTR button on the lens to start recording.

The REC (recording, red tally) indicator lights in the viewfinder, and the tally indicator lights.

2 Press the EJECT button with the unit still in the recording state.

The REC (recording, red tally) indicator in the viewfinder and the tally indicator flash (once per second), and the disc is ejected.

If the message "DISC FULL!" appears

You can continue recording, because video and audio continue to be saved to internal memory. Press the EJECT button and continue to step **3**.

Note

Do not stop recording before pressing the EJECT button. If you stop recording, the unit will stop storing video and audio in internal memory and this function will not work.

3 Quickly remove the disc, insert a formatted blank disc, and close the cover.

When the disc is loaded, the REC (recording, red tally) indicator in the viewfinder and the tally indicator change to lit, and recording continues.

If the REC indicator and tally indicator begin flashing rapidly during the disc exchange

If the indicators change to flashing twice per second, that means that the unit's internal memory is almost full. Complete the disc exchange quickly.

Notes

- If you insert a disc that cannot be recorded (such as a full disc or one with the Write Inhibit tab of the disc set to the recording disabled position), the unit ejects that disc as soon as it is recognized.
- Recording may not start immediately if you insert an unformatted disc, or a disc that already contains a large number of clips. As a result, the video and audio may be interrupted.

Recording with the Clip Continuous Rec function

Normally, a clip is created as an independent file each time that you start and stop recording. But this function allows you to start and stop recording while continuously recording to the same clip, for as long as the function remains enabled. This is convenient when you do not want to generate a large number of short clips, and when you want to record without worrying about exceeding the clip limit (up to 300 clips). It is still easy to find recording start points, because a Rec Start essence mark is recorded at the recording start point each time you start recording.

1 Display the REC FUNCTION page in the OPERATION menu.

See "Basic menu operations" (page 192) for more information about menu operations.

2 Select CLIP CONT REC and turn the MENU knob until ON appears.

"CONT" appears in the viewfinder, and the function is enabled.

You can assign the Clip Continuous Rec on/off function to one of the ASSIGN 1/2/3/4/5 switches or the RET button on the lens.

For details, see "Assigning functions to ASSIGN switches" (page 208).

Note

Clip Continuous Rec settings cannot be made while this unit is in the following states.

- The Picture Cache function is enabled.
- The Interval Rec function is enabled.
- The Disc Exchange Cache function is enabled.
- The Live Logging function is set to Live View mode.
- During Slow & Quick Motion shooting

To stop the function

When the function is enabled, you can stop it by executing any of the following operations. (A new clip will be created when you next start recording.)

- Operate on a clip (lock, delete, or rename a clip)
- Establish a network connection
- Eject the disc
- Change the recording format
- Power the unit off

To disable the function

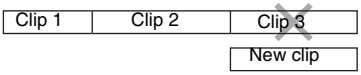
Set CLIP CONT REC in the REC FUNCTION page of the OPERATION menu to OFF.

Retaking the most recent clip

A retake function is available, making it easy to erase and retake the most recently recorded clip. To use the retake function, you need to assign it to one of the ASSIGN 1/3/4/5 switches in advance.

For details, see "Assigning functions to ASSIGN switches" (page 208).

Example: After recording clip 3, you want to delete it and record a new clip 3 after clip 2.



To retake the most recent clip

With recording paused or after the end of a recording review *(see page 76)*, proceed as follows.

1 Hold down the button to which the retake function has been assigned.

While the button is held down, the last frame of the recorded clip and the message "PUSH RET FOR CLIP DELETE" appears.

2 In this state, press the RET button.

The message "DELETING LAST CLIP" appears, and the processing for deleting the last recorded clip begins.

When the deleting has finished, the message "LAST CLIP WAS DELETED" appears.

Notes

- The retake function cannot be used when the Clip Continuous Rec function is enabled.
- If an operation (other than recording review) which is not a retake operation is carried out after the last clip has been recorded, the retake function does not work even when the camcorder is in the recording pause state.

  In this case, the message "RE-TAKE NOT ALLOWED!" appears. When you want to replace the last clip with a new clip, delete the clip *(see page 123)*. Once you carry out a retake operation, the last clip is deleted even if you do not carry out a recording operation afterwards.

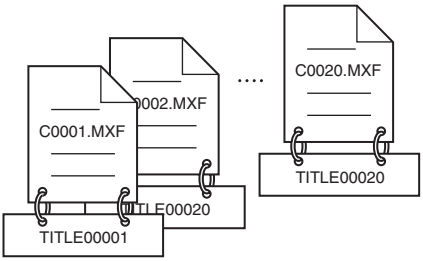
Assigning user-defined clip titles automatically

About the automatic title generation function

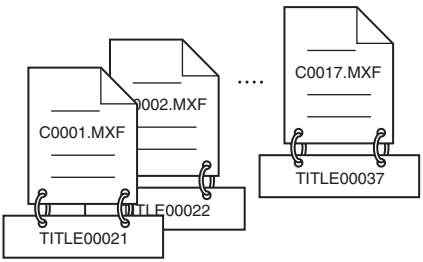
By default, clips on each disc are assigned names in the range C0001.MXF to C9999.MXF. For this reason, two discs can contain clips with the same names.

The automatic title generation function allows you to assign titles to all of the clips on several discs, which facilitates clip management. For example, if the titles TITLE00001 to TITLE00020 are assigned to clips C0001.MXF to C0020.MXF on disc 1, then the titles TITLE00021 to TITLE00037 are assigned to clips C0001.MXF to C0017.MXF on disc 2.

Titles are made up of prefixes, up to 10 characters in length, and five-digit serial numbers such as TITLE 00001.



Clips recorded on Disc 1



Clips recorded on Disc 2

Setting the title prefix

You can assign title prefixes by choosing from a prefix list stored in internal memory, or by entering the prefix directly.

However, to choose from a prefix list, you must create the list beforehand on a computer and

transfer it to the unit's internal memory using a USB flash drive.

Setting the initial value of the serial number

The initial value of the serial number can be set to 00001 (the default) or to any other number. The number is automatically incremented by 1 each time you record a clip. When it reaches 99999, it returns to 00001 for the next clip.

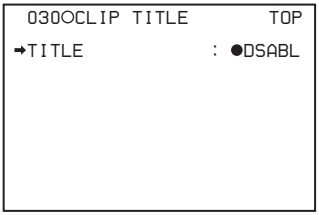
Note

Duplicate clip titles can be generated depending on the serial number setting, for example if you reset the serial number to the original value after recording several clips. Care should be taken when setting the serial number.

To assign user-defined titles automatically when clips are recorded

(How to select an item in the menu screen: Turn the MENU knob to move ➡ to the desired item.)

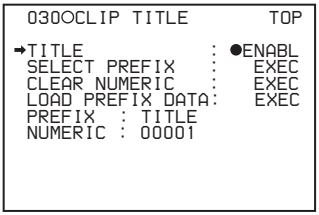
1 Display the CLIP TITLE page of the OPERATION menu.



For details on menu operations, see "Basic menu operations" (page 192).

2 Select "TITLE" and then press the MENU knob.

3 Turn the MENU knob to display "ENABL" and then press the MENU knob.



Clip titles will be generated automatically if you record in this state.
The title of the next clip to be recorded will be a combination of the prefix in the PREFIX field and the serial number in the NUMERIC field.

To create a list of title prefix strings

Prepare the data beforehand according to the following rules.

File name

Assign the name "TITLES.TXT" to the file.

Input format

Enter title prefixes one at time, separated by newline (CRLF) characters.
Prefixes can be up to 10 characters long. A prefix file can contain up to 20 prefixes.

Allowable characters

- Digits: 0 to 9
- Alphabetic characters: a to z, A to Z
- The following symbols: !, #, $, %, &, ', (,), ~, =, -, ^, @, [,], {, }, +, ; (semicolon), , (comma), . (period), _ (underscore)
- Space

Title prefix list example

Tennis<CRLF>
Basketball<CRLF>
Skiing_1<CRLF>
Skiing_2<CRLF>

To transfer a title prefix list to the internal memory of the camcorder

(How to select an item in the menu screen: Turn the MENU knob to move ➡ to the desired item.)

1 Create the following directory on the USB flash drive and copy the title prefix file (TITLES.txt) into it.
\\MSSONY\PRO\XDCAM\GENERAL\VAL_LIST

2 Connect a USB flash drive with the title prefix file (TITLES.TXT) to the USB connector of the camcorder.

3 On the CLIP TITLE page of the OPERATION menu *(see page 159)*, select "LOAD PREFIX DATA" and then press the MENU knob.
"USB MEMORY ACCESS" appears, and the file on the USB flash drive (TITLES.TXT) is transferred to the internal memory of the unit.

The message “COMPLETE!” appears when the transfer finishes.

Note

The message “FILE NOT FOUND!” appears if no list of title prefixes is found.
Check the location where the file is stored on the USB flash drive.

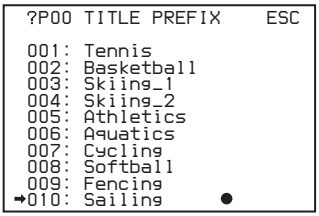
To select a prefix from the title prefix list

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the CLIP TITLE page of the OPERATION menu.

For details on menu operations, see “Basic menu operations” (page 192).

2 Select “SELECT PREFIX” and then press the MENU knob.
A list of up to 20 title prefixes appears.



Note

When no list of title prefixes has been transferred to the internal memory of this unit, only the initial value “TITLE” appears.

3 Select the desired title prefix from the list, and then press the MENU knob.
The CLIP TITLE page appears again, and the selected prefix appears in the PREFIX field.

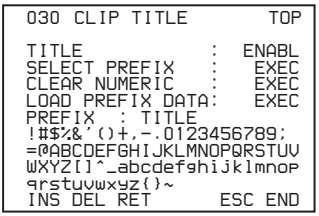
To enter a title prefix directly

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the CLIP TITLE page on the OPERATION menu.

For details on menu operations, see “Basic menu operations” (page 192).

2 Select “PREFIX” and then press the MENU knob.
A prefix string appears.



3 Move ■ onto the character you want to change, and then press the MENU knob.

4 Turn the MENU knob to move ■ onto the desired character in the list of selectable characters, and then press the MENU knob.

5 Repeat steps 3 and 4 to enter the remaining characters.

6 When you have finished entering the prefix, turn the MENU knob to move ■ to “END” and then press the MENU knob.
The camcorder exits prefix input mode, and the original CLIP TITLE page appears.

To set the initial value of the clip title serial number

You can set the initial value of the clip title serial number to 00001 (default) or to any 5-digit value.

To return the initial value to 00001

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the CLIP TITLE page on the OPERATION menu.

For details on menu operations, see “Basic menu operations” (page 192).

2 Select “CLEAR NUMERIC”and then press the MENU knob.
The message “CLEAR OK? ➧YES NO” appears.

3 Select “YES” and then press the MENU knob.
The value in the NUMERIC field returns to 00001.

To set the initial value to any number

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the CLIP TITLE page on the OPERATION menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select "NUMERIC" and then press the MENU knob.

3 Move ■ onto the digit you want to change, and then press the MENU knob.

4 Turn the MENU knob to move ■ onto the desired digit in the list of selectable digits, and then press the MENU knob.

5 Repeat steps 3 and 4 to enter the remaining digits.

6 When you have finished entering the value, turn the MENU knob to move ■ to "END" and then press the MENU knob.

The camcorder exits numeric input mode, and the original CLIP TITLE page appears.

To check clip titles

Press the THUMBNAIL button to display the thumbnail screen, and select the clip whose title you want to check.

The title of the selected clip appears in the upper left of the screen.

See "Clip thumbnail screen" (page 105) for more information about the thumbnail screen.

Notes

- It is not possible to specify 00000 as the initial value. Even if you enter 00000, the value is reset to 00001 when the camcorder exits numeric input mode.
- The value of the serial number is incremented by 1 every time a title is generated. When the value reaches 99999, the next number restarts from 00001.
- Duplicate clip titles can be generated if you reset the serial number after recording several clips or the same is true depending on the value setting. Care should be taken when setting the serial number.

Assigning user-defined names to clips and clip lists

The following standard format names are assigned automatically to clips and clip lists that are created or recorded by XDCAM devices.

Clips: C0001.MXF to C9999.MXF

Clip lists: E0001E01.SMI to E0099E01.SMI

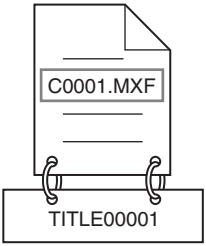
When you record or create clips and clip lists, you can assign user-defined names instead of the standard format names. Assigning meaningful names to clips and clip lists can facilitate file management.

Limitations

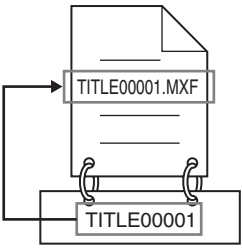
- Letters, numbers and symbols from the Unicode 2.0 character set can be used.
  However, the following control characters and symbols cannot be used.
  - **Control characters:** U+0000 to U+001F, U+007F
  - **Symbols:** ", *, /, :, <, >, ?, \, |
- Depending on the character type, the length of name ("C*" part) may be limited to 14 characters. (The limit for ASCII characters is 56 characters.)
- All file name extensions are converted automatically to uppercase.
- Titles are used as user-defined clip names on this unit. Therefore, the available characters are limited to those supported by the title function.
- Files generated along with clips and clip lists are assigned the same names (the "C*" or "E*" part of the following file names).
  - **Clips:** Metadata files (C*M01.XML), user metadata files (C*M02.KLV), proxy AV data files (C*S01.MXF)
  - **Clip lists:** Metadata files (E*M01.XML)
- The following names cannot be assigned.
  - **Clips:** C0000.MXF
  - **Clip lists:** E0000E01.SMI, E0100E01.SMI to E9999E01.SMI, E0000.SMI, E0100.SMI to E9999.SMI
- The following names should be avoided.
  - **Clips:** C5000.MXF to C9999.MXF
  - **Clip lists:** E0001.SMI to E0099.SMI

To assign clip names on this unit

The title assigned to a clip is also used as the name of that clip (or the file name).



When sub item “AUTO NAMING” is set to “C****”



When sub item “AUTO NAMING” is set to “TITLE”

(How to select an item in the menu screen: Turn the MENU knob to move ➡ to the desired item.)

1 Before starting, set TITLE on the CLIP TITLE page of the OPERATION menu to ENABL and set a title *(see page 90)*.

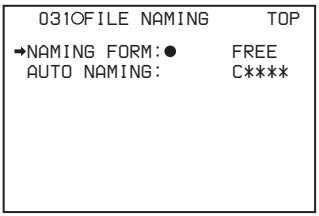
For details on menu operations, see “Basic menu operations” (page 192).

2 Display the FILE NAMING page of the OPERATION menu.

3 Select NAMING FORM and then press the MENU knob.

4 Turn the MENU knob to display “FREE” and then press the MENU knob.

You can now enter a user-defined name.



5 Turn the MENU knob to select “AUTO NAMING” and then press the MENU knob.

6 Turn the MENU knob to display “TITLE” and then press the MENU knob.

The same name will now be given to newly recorded clips.

Notes

- An FTP client software that supports UTF-8 is required to use Unicode characters other than ASCII characters. Command prompt FTP commands do not support UTF-8.
- When the first letter of the title setting on the CLIP AUTO TITLING menu is a space or period (.), the clip name is the title string minus the first letter.

To use clip names and clip list names via FTP

Carry out steps **2** to **4** of “To assign clip names on this unit” (page 92).

It is possible to write, transfer, and rename clips and clip lists with user-defined names over FTP connections *(see page 232)*.

User-defined clip names can be used via FTP

User-defined clip list names can be used via FTP

To check clip names

Press the THUMBNAIL button to display the thumbnail screen, and select the clip whose name you want to check.

The name of the selected clip appears in the upper left of the screen.

See “Clip thumbnail screen” (page 105) for more information.

Note

The item at the upper left of the screen is displayed according to the following order of priority.
Title > user-defined clip name > standard format clip name
Therefore, the display of this item changes as follows, depending on whether or not there is a title.

- When a title has been set as a clip name on this unit, the title is displayed for clips recorded on this unit.
- The user-defined name or standard format name is displayed for clips without a title.

To check clip information (name, title, etc.)

For details, see "Checking clip properties" (page 119).

Using planning metadata

Planning metadata is a file that contains metadata about the clips to be shot and recorded.
To use planning metadata, you need to load a planning metadata file into the unit's memory before starting to shoot.
There are three ways to load files.

- Automatically load a file that has been written to the following directory on a Professional Disc via an FTP connection.
  If you do not want to load a file automatically, add a "load" property to the PlanningMetadata tag and set the value of the property to "false", as shown in the shaded part of the following example.
  Example: <PlanningMetadata …sp load="false"sp version="1.00">
- Use a GUI screen to load a file that has been written to the following directories on a Professional Disc or a USB flash drive *(see page 132)*.
- Use a web browser to load a planning metadata file *(see page 136)*.

File creation rules

File location	File name
Professional Disc: General/Sony/Planning directory a)	• Format that can be used in the General directory *(see page 231)* • Extension: XML
USB Flash drive: General/Sony/Planning directory	• ASCII characters (up to 63 characters including the extension) • Extension: XML

a) The General/Sony/Planning directory is generated automatically when you format a disc.

Note

Do not save more than 100 planning metadata files in the above save locations. The unit may fail to load the files correctly if more than 100 are saved.

For greater convenience in planning metadata operations, you can use the optional CBK-WA01 Wi-Fi Adaptor and the supplied Sony Planning Metadata Add-in application software. For details, refer to the operation manual of the CBK-WA01 Wi-Fi Adaptor.

To set clip names by using planning metadata

The following two types of clip name strings can be written in a planning metadata file.

- The ASCII format name that appears in the viewfinder 1)
- The UTF-8 format name that is actually registered as the clip name 2)

1) It is also possible to display the UTF-8 format name, or no name *(see page 133)*.
2) When no UTF-8 format name string is specified, the ASCII format name string is registered as the actual clip name.

Clip name string format

In a text editor, modify the two fields in the <Title> tag that contain the clip name strings (the shaded fields in the example in the next section "Clip name string example").
Enter a name in the first field in ASCII format (up to 50 characters), and enter another name in the second field in UTF-8 format (up to 50 bytes).

Clip name string example

```
<?xml sp version= "1.0" sp encoding="UTF-8"?>↵
<PlanningMetadata sp xmlns="http://
  xmlns.sony.net/pro/metadata/
  planningmetadata" sp assignId="
  P0001" sp creationDate="
  2008-01-20T17:00:00+09:00" sp lastUpdate="
  2008-03-28T10:30:00+09:00" sp
  version="1.00">↵
    <Properties sp propertyId="
      assignment" sp update="2008-01-20T09:00:
      00+09:00" sp modifiedBy="Chris">↵
        <Title sp usAscii="Typhoon" sp xml:lang
          ="en">Typhoon_Strikes_Tokyo</
          Title>↵
    </Properties>↵
```

</PlanningMetadata>↵

In the above example, sp indicates a space and ↵ indicates a carriage return.

Notes

- When you create a file, enter each statement as a single line with a CRLF only after the last character in the statement line, and do not enter spaces except where specified.
- If the UTF-8 format string exceeds 50 bytes, the ASCII format string is used as the clip name string.
  If no ASCII format name is specified, the standard format clip name is used.
  When an ASCII format name string exceeds 50 characters, and when an UTF-8 format name string exceeds 50 bytes, the standard format clip name is used.

Setting clip names

1 Load a planning metadata file containing clip names into the unit's memory *(see page 132 and page 136)*.

2 Carry out steps 2 to 5 of "To assign clip names on this unit" *(page 92)*.

3 Turn the MENU knob to display "PLAN", and then press the MENU knob.

Each time that you start recording, the unit automatically creates clip names using the names specified in the planning metadata file. An underscore (_) and a five-digit serial number (00001 to 99999) is appended to each clip name.

Examples of automatically generated clip names

- Clip names displayed in the viewfinder: Typhoon_00001, Typhoon_00002, ... 1)
- The actually recorded clip names: Typhoon_Strikes_Tokyo_00001, Typhoon_Strikes_Tokyo_00002, ...

1) When display of the ASCII format clip name has been selected *(see page 133)*.

Notes

- The serial numbers return to 00001 on the next recording operation if you reach number 99999.
- Serial numbers are not reset when you power the unit off or exchange discs (newly generated numbers are continuous on the old ones).
- If the ASCII format clip name string is longer than 14 characters, it is displayed in the viewfinder as the first 7 characters + ■ (abbreviated) + the last 5 characters, for a total of 13 characters.
  You can change the serial numbers by using Planning Clip Name Suffix in the Disc Menu *(see page 110)*.

To specify user disc IDs by using planning metadata

You can use planning metadata to define user disc IDs which are saved in metadata files on XDCAM discs. To define a user disc ID, specify it as an ASCII or UTF-8 format disc name string in the planning metadata.

Notes

- A user disc ID is set only after the recording is finished.
- User disc IDs cannot be set to the disc where another user disc ID is already set. Use one of the following to change the user disc ID, or delete it before starting the operation described below.
  - Software keyboard screen *(see page 131)*
  - One of the software applications

Disc name string format

Use a text editor to enter an ASCII string (up to 127 characters) or a UTF-8 string (up to about 42 multibyte characters) in the shaded part of the example in the next section, "Example of disc name specification".

Example of disc name specification

```
<?xmlspversion="1.0"spencoding="UTF-8"?>↵
<PlanningMetadata
  xmlns="http://xmlns.sony.net/pro/metadata/
  planningmetadata"spassignId="H00123"sp
  creationDate="2009-09-10T08:00:00-05:00"sp
  lastUpdate="2009-09-10T13:43:52-05:00"sp
  version="1.00">↵
    <Properties propertyId="assignment"sp
      class="original"spupdate="
      2009-09-10T15:00:00-05:00"sp
      modifiedBy="Chris">↵
        <Title usAscii="Football Game"sp
          xml:lang="ja">Football Game 10/09/
          2009</Title>↵
              <Meta name="MediaName"sp
                content="FootBall "/>↵
      </Properties>↵
</PlanningMetadata>↵
```

In this example, sp indicates a space and ↵ indicates a newline.

You can check user-specified disc name strings in the Disc Properties screen *(see page 131)*, where they appear as the user disc ID.

Note

When you create a planning metadata file, enter the specification as a single statement with newlines at the indicated newline positions only and spaces at the indicated space positions only (except for spaces in the disc name string).

To set essence mark names by using planning metadata

You can use planning metadata to specify user-defined names for the Shot Mark0 to Shot Mark 9 essence marks that correspond to the 0 to 9 keys on a USB keyboard. When planning metadata that contains user-defined essence mark name strings is loaded into this unit's memory, the unit displays those names for the essence marks that correspond to the keys and that are recorded when the keys are pressed.

See page 80 for more information about recording essence marks, and see page 94 for more information about how to load files.

Essence mark name string format

Use a text editor to enter essence mark names in the sections indicated by shading in "Essence mark name string example". Names can be either in ASCII format (up to 32 characters) or UTF-8 format (up to 16 characters).

Note

If a name string contains even one non-ASCII character, the maximum length of that string is 16 characters.

Essence mark name string example

```
<?xml␣version="1.0"␣encoding=
  "UTF-8"?>↵
<PlanningMetadata xmlns="http://
  xmlns.sony.net/pro/metadata/planningmetadata
  "␣assignId="H00123"␣creationDate=
  "2009-04-15T08:00:00Z"␣lastUpdate=
  "2009-04-15T15:00:00Z"␣version="1.00">↵
    <Properties propertyId="assignment"␣
      class="original"␣update=
      "2009-04-15T15:00:00Z"␣modifiedBy=
      "Chris">↵
      <Title usAscii="Football
        Game"␣xml:lang="en">Football Game
        15/04/2009</Title>↵
        <Meta name="_ShotMark1"␣content=
          "Goal "/>↵
        <Meta name="_ShotMark2"␣content=
          "Shoot "/>↵
        <Meta name="_ShotMark3"␣content=
          "Corner Kick "/>↵
        <Meta name="_ShotMark4"␣content=
          "Free Kick "/>↵
        <Meta name="_ShotMark5"␣content=
          "Goal Kick "/>↵
        <Meta name="_ShotMark6"␣content=
          "Foul "/>↵
        <Meta name="_ShotMark7"␣content=
          "PK "/>↵
        <Meta name="_ShotMark8"␣content=
          "1st Half "/>↵
        <Meta name="_ShotMark9"␣content=
          "2nd Half "/>↵
        <Meta name="_ShotMark0"␣content=
          "Kick Off "/>↵
    </Properties>↵
</PlanningMetadata>↵
```

In the above example, ␣ indicates a space and ↵ indicates a carriage return.
You can check user-defined essence mark name strings in the User Defined Essence Marks screen *(see page 134)*.

Note

When you create a definition file, enter each statement as a single line with a CRLF only after the last character in the statement line, and do not enter spaces except where specified, except within essence mark name strings.

Recording video from external devices

You can select between recording of data shot by the camera and recording of data input from an external device by using a menu or by using the ASSIGN 2 switch.

Notes

- If you want to use the ASSIGN 2 switch, you must assign the video switching function to the ASSIGN 2 switch beforehand *(see page 208)*.
- Switching by the ASSIGN 2 switch takes priority over switching by the menu. (Switching by menu is not possible if the function has been assigned to the ASSIGN 2 switch.)
- Video breakup may occur around the switch if you switch the input during recording.

- Camera video is recorded if you switch to external input without inputting an external video signal to the SDI IN connector or the GENLOCK IN connector.
- It is not possible to record external input video with a changed aspect ratio.

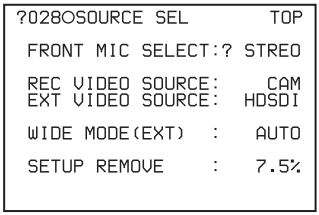
To record SDI signals

You can record HD-SDI or SD-SDI signals input to the SDI IN connector. When an HD recording format (MPEG HD422 50, or MPEG HD420 HQ/SP) is selected, SD-SDI signals are upconverted to HD signals before recording.

Notes

- It is not possible to record HD-SDI signals when an SD recording format (MPEG IMX 50/40/30, or DVCAM) is selected.
- The system frequency and resolution (HD-SDI input only) of input signals must match the current settings of this unit. Otherwise the input signals cannot be recorded.
- Only audio signals embedded in SDI signals are recorded, regardless of the settings of the AUDIO IN CH-1/CH-2/CH-3/CH-4 switches.

1 Display the SOURCE SEL page of the OPERATION menu.



For details on menu operations, see "Basic menu operations" (page 192).

2 Select REC VIDEO SOURCE, and turn the MENU knob to display "EXT".

3 Select EXT VIDEO SOURCE, and turn the MENU knob to select the desired signal to be recorded.

As you turn the MENU knob, the setting changes as follows: HDSDI [1] ⟷ SDSDI ⟷ VBS.

1) HDSDI cannot be selected when an SD recording format is selected.

After you complete this setting, you can record the video signals of external devices by inputting the HD SDI signals selected in step **3** to the SDI IN connector.

Recording analog composite signals

You can record analog composite signals input to the GENLOCK IN connector. When an HD recording format (MPEG HD422 50, or MPEG HD420 HQ/SP) is selected, analog composite signals are upconverted to HD signals before recording.

Note

Even if the GENLOCK item on the GENLOCK page of the MAINTENANCE menu is set to OFF, the unit automatically genlocks to external video signals that are input to the GENLOCK IN connector. When GENLOCK is set to OFF, the genlock is cancelled when the input of external video signals stops and the unit switches to camera shooting.

1 Display the SOURCE SEL page of the OPERATION menu.

2 Select REC VIDEO SOURCE, and turn the MENU knob to display "EXT".

3 Select EXT VIDEO SOURCE, and turn the MENU knob to display "VBS".

After you complete this setting, you can record external video signals by inputting analog composite signals to the GENLOCK IN connector.

Using the Live Logging function

The Live Logging function allows you to transfer proxy AV data to a computer as you are shooting, or to send and receive metadata between this unit and a computer.
On this unit, you can transfer data via Ethernet or a wireless LAN. [1)]
This function allows you to do the following on your computer.

- View proxy AV data
- Add and edit metadata (titles, comments, essence marks, and so on)
- Create clip lists

After adding or editing metadata, or creating a clip list, you can transfer the metadata or clip list from the computer back to this unit for recording on the original disc.

1) To make wireless LAN connections, you must install the optional CBK-WA01 Wi-Fi Adaptor or the optional CBK-WA100 Wireless Adaptor.

See page 212 for more information about wireless LAN settings.

There are two Live Logging operating modes: Live mode and Live View mode. The following table lists the main functions provided by each operating mode.

Operating mode	Main functions as seen from this unit
Live	• Send clip metadata • Write edited clip metadata back to disc • Receive planning metadata • Receive clip lists
Live View	• Same functions as above • Send proxy AV data

Notes

- In Live View mode, it is not possible to set time data by setting the F-RUN/SET/R-RUN switch to SET. To set time data, first switch from Live View mode to another operating mode.
- Regardless of the setting of the F-RUN/SET/R-RUN switch, time data advances in F-RUN mode while the unit is operating in Live View mode.
- In Live View mode, it is not possible to set the PRESET/REGEN/CLOCK switch to REGEN and record timecode that is continuous with timecode read from the disc.

To record with the Live Logging function enabled

On the REC FUNCTION page of the OPERATION menu, set LIVE LOGGING to one of the following.
LIVE: Live mode
VIEW: Live view mode

Notes

- It is not possible to enable the Live Logging function while this unit is in the following states.
  - The proxy data recording function is enabled.
  - During Slow & Quick Motion shooting
- It is not possible to set the Live Logging function to Live View mode while this unit is in the following states.
  - The Picture Cache function is enabled.
  - The Interval Rec function is enabled.
  - The Disc Exchange Cache function is enabled.
  - The Clip Continuous Rec function is enabled.
- The Live Logging function is disabled automatically whenever you enable the proxy data recording function.

Recording proxy data

You can connect a USB flash drive to the USB connector and use it to save proxy data. (Here, “proxy data” refers to proxy AV data for the clips on the disc as well as to metadata.) [1)]
You can then connect this USB flash drive to a computer to view the recorded proxy AV data, to edit and enter metadata (titles, comments, essence marks, and so on), and to create clip lists.

1) When recording of proxy data finishes, the planning metadata that has been loaded into this unit (if any) is also copied to the USB flash drive. The data is saved in the following directories, which are created automatically when a USB flash drive is mounted.
   - Proxy AV data: \MSSONY\PRO\XDCAM\MEMDISC\PROAVID\Sub
   - Metadata: \MSSONY\PRO\XDCAM\MEMDISC\PROAVID\Clip
   - Planning metadata: \MSSONY\PRO\XDCAM\MEMDISC\PROAVID\General\Sony\Planning

Notes

- USB flash drives must be formatted with the FAT32 file system. If a drive is formatted with any other file system, reformat it on this unit *(see page 100)*.
- Never remove a USB flash drive or disconnect the battery pack or power cord while it is being accessed (while this unit’s ACCESS indicator is lit). Doing so can corrupt the data on the USB flash drive and make it unusable.

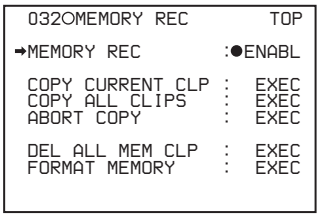
To enable proxy data recording and copying to USB flash drives

Before starting, set ETHERNET/USB in the POWER SAVE page of the OPERATION menu to “ENABL”.

1 In the OPERATION menu, display the MEMORY REC page.

See “Basic menu operations” (page 192) for more information about menu operations.

2 Select MEMORY REC, and turn the MENU knob until ENABL appears.


032OMEMORY REC TOP
➡MEMORY REC :●ENABL
COPY CURRENT CLP : EXEC
COPY ALL CLIPS : EXEC
ABORT COPY : EXEC
DEL ALL MEM CLP : EXEC
FORMAT MEMORY : EXEC

This enables proxy data recording and copying from discs to USB flash drives.

Notes

- It is not possible to make proxy data recording settings while this unit is in the following states.
  - Wireless LAN connections are enabled.
- The Live Logging function is disabled automatically whenever you enable the proxy data recording function.

To record proxy data while synchronizing with disc recording

1 Connect a USB flash drive to the USB connector.

2 Check the memory symbol and the memory remaining display *(see page 29)*.

3 After confirming that the USB flash drive has enough free capacity, press the REC START button or the VTR button on the lens to start recording as normal. 1)

The clip's proxy data is written to the USB flash drive at the same time that the clip is recorded to the disc.

1) After the unit is powered on. some time is required for the memory symbol to appear. However, if the connected USB flash drive has enough free memory and recording is enabled, then recording of proxy data to the USB flash drive begins as soon as recording starts, even if the memory symbol has not yet appeared. The proxy data is the same data as the proxy data for clips that are recorded to the disc.

Notes

- If you start recording immediately after powering the unit on, and then stop recording after only a short time, the recording operation does not end until the unit has recognized the USB flash drive and recorded the proxy data to it. Note that if you enable this function and start recording without connecting a USB flash drive, recording will take longer because the unit will require more time to recognize that no flash drive is connected.
- The message "USB MEMORY INHIBIT!" or "USB M. INHI" appears if you connect and attempt to access a write protected USB flash drive, In this case, remove the USB flash drive, set it to enable recording, and connect it again.
- The message "MEM REC NG!" appears if you start recording without a USB flash drive connected. After recording stops, connect a USB flash drive, refer to "To copy the proxy data of a clip on a disc to a USB flash drive", and copy the proxy data that could not be written to the USB flash drive during recording.
- It is not possible to record proxy data to a USB flash drive while the Clip Continuous Rec function is enabled. If you attempt to do so, the message "MEM REC NG!" appears and the data is not recorded. To record the proxy data, stop recording and copy the data to the USB flash drive as explained below in "To copy the proxy data of a clip on a disc to a USB flash drive", and then resume shooting.
- Never disconnect the battery pack or power cord while recording to a USB flash drive (while the ACCESS indicator of this unit is lit). If you do so, recording processing will not end normally, and the clip proxy data that was recorded to the USB flash drive before the interruption will be lost.
- The message "MEM REC NG!" appears if the USB flash drive runs out of memory during recording (while the ACCESS indicator of this unit is lit), and the clip proxy data that was being recorded immediately before the message appeared is lost. If this occurs, exchange the USB flash drive, refer to "To copy the proxy data of a clip on a disc to a USB flash drive", and copy the proxy data that could not be recorded.
- It is not possible to record proxy data to a USB flash drive only.

To stop recording

Recording to a USB flash drive stops whenever recording to the disc stops.

To stop recording to the USB flash drive only, set MEMORY REC on the MEMORY REC page of the OPERATION menu to "DSABL".

To copy the proxy data of a clip on a disc to a USB flash drive

Proceed as follows to select an already recorded clip on a disc and copy its proxy data to a USB flash drive.

Note

The following functions stop during execution of a copy.

- Playback cue up
- Picture Cache recording

1 Search for the video of the clip (being played or stopped) that you want to copy.

2 Select COPY CURRENT CLP in the MEMORY REC page of the OPERATION menu, and then press the MENU knob.
The message “EXECUTE OK?” appears.

3 Select “YES”, and then press the MENU knob.
During the execution of the copy, the message “MEMORY ACCESS **%” appears in the viewfinder and on the LCD monitor, where “**” is replaced with a number (0 to 99) that indicates the percentage completed. When processing finishes, the message “COMPLETE!” appears.
The proxy data of the current clip (the currently stopped clip, or the one that being played) is copied to the USB flash drive.

To copy the proxy data of all clips on a disc to a USB flash drive

Proceed as follows to copy the proxy data of all clips on a disc to a USB flash drive.

Note

The following functions stop during execution of a copy.
- Playback cue up
- Picture Cache recording

1 Select COPY ALL CLIPS in the MEMORY REC page of the OPERATION menu, and then press the MENU knob.
The message “EXECUTE OK?” appears.

2 Select “YES”, and then press the MENU knob.
During the execution of the copy, the message “MEMORY ACCESS **%” appears in the viewfinder and on the LCD monitor, where “**” is replaced with a number (0 to 99) that indicates the percentage completed. When processing finishes, the message “COMPLETE!” appears.
The proxy data of all clips on the disc is copied to the USB flash drive.

Note

The message “M. Shortage” appears when the mount of data to be copied exceed the free capacity of the USB flash drive. The copy is not executed. Exchange the USB flash drive for one with enough free capacity.

To cancel a copy to a USB flash drive

1 Select ABORT COPY in the MEMORY REC page of the OPERATION menu, and then press the MENU knob.
The message “EXECUTE OK?” appears.

2 Select “YES”, and then press the MENU knob.
The message “ABORTING” appears in the viewfinder and on the LCD monitor while the unit is aborting the copy operation. The message “ABORT” appears when the abort processing is completed.

To delete recorded proxy data

To delete data recorded on the disc at the same time that you delete proxy data from a USB flash drive, execute the DELETE CLIP command in the Thumbnail menu *(see page 123)*.
To delete proxy data from the USB flash drive only, proceed as follows.

1 Select DELE ALL MEM CLP in the MEMORY REC page of the OPERATION menu, and then press the MENU knob.
The message “EXECUTE OK?” appears.

2 Select “YES”, and then press the MENU knob.
During the execution of the deletion, the message “MEMORY ACCESS” appears in the viewfinder and on the LCD monitor. When processing finishes, the message “COMPLETE” appears.
All of the proxy data in the USB flash drive is deleted.

To format a USB flash drive

Proceed as follows to format a USB flash drive with the FAT32 file system.

1 Select FORMAT MEMORY in the MEMORY REC page of the

OPERATION menu, and then press the MENU knob.
The message “EXECUTE OK?” appears.

2 Select “YES”, and then press the MENU knob.
During the execution of the format, the message “MEMORY ACCESS” appears in the viewfinder and on the LCD monitor. When processing finishes, the message “COMPLETE” appears.
All of the data in the USB flash drive is deleted.

Obtaining GPS location information

To record location information

Set GPS to “ON” on the GPS SETUP page of the OPERATION menu of the camcorder.
is displayed in the top right of the viewfinder to indicate that the unit is attempting to obtain location information. When the position is established, location information is recorded when shooting video.

Icons displayed on the screen

The icon displayed on the screen changes as follows depending on the state of the signals received from GPS satellites.

Positioning status	Display	GPS receive state
Off	No display	GPS SETTING is set to “OFF” or an error has occurred.
Positioning not available	NO GPS SIGNAL	A GPS signal cannot be received, preventing location information from being obtained. Move to a location with a clear view of the sky.
Searching for satellites		Searching for GPS satellites. Several minutes may be required in order to fix the position.
Positioning		A weak GPS signal is being received.
Positioning		A GPS signal is being received, and location information is available.
Positioning		A strong GPS signal is being received, and location information is available.

Notes

- If a positioning icon is not displayed after several minutes, there may be a problem with signal reception. You can continue shooting or move to an area with a clear view of the sky. Shooting when a positioning icon is not displayed means that location information will not be recorded.
- The GPS signal may not be received when indoors or near tall structures. Move to a location with a clear view of the sky.
- The recording of GPS information may be interrupted, depending on the strength of the received signal, even if a positioning icon is displayed.

To display the state of GPS data reception in the viewfinder

Set DISP GPS to ON on the VF DISP 2 page of the OPERATION menu to display the GPS data reception status at all times in the viewfinder.

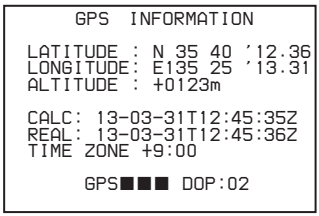
Verifying the GPS location

When recording or playing video with GPS data, you can check the location on the GPS INFORMATION screen in the viewfinder.

To display the GPS INFORMATION screen in the viewfinder

1 Set STATUS GPS to ON on the SET STATUS page of the OPERATION menu.

2 Push the STATUS ON/SEL/OFF switch on the camcorder to the ON/SEL position.
The displayed screen changes each time the switch is pushed. Push the switch until the GPS INFORMATION screen appears.
The GPS INFORMATION screen, below, is displayed for a few seconds.



Displayed items

Item	Description
LATITUDE	Latitude [a]
LONGITUDE	Longitude [a]
ALTITUDE	Altitude [a]
CALC	Calculated date and time [b]
REAL	Current date and time [c]
TIME ZONE	Time zone offset from UTC

a) When recording, the current latitude, longitude, and altitude are displayed. During playback, recorded information is displayed.

b) The calculated date and time displays the time obtained using positioning data received from three or more GPS satellites. After positioning is established, the display stops when positioning is subsequently lost. The time is displayed when positioning is re-established. While positioning is established, the time displayed is always the same as the current date and time.
During playback, the calculated time is not displayed.

c) The current date and time displays the time obtained from one or more GPS satellites. It matches the GPS satellite clock. When no GPS satellites are available, it displays the time using a crystal-operated clock within the module.
During playback, the calculated date and time recorded on the disc is displayed.

When shooting without available GPS data, [---------] is displayed.

Problems when using GPS

GPS signals cannot be received

The signals from GPS satellites may not be received due to interference caused by obstructions. In this case, move to a location with a clear view of the sky. For details about locations that may obstruct the signal, see *page 270*.

Calculated location appears incorrect

An error of up to a few hundred meters (yards) may occur if the received GPS signal is reflected off nearby structures or if the signal is very weak.

Chapter 5 Operations in GUI Screens

Overview

You can perform scene searches, play the searched scenes, and select scenes (edit clip list) in Graphical User Interface (GUI) screens. The GUI screens are your gateways to discs and the data saved on discs.

(The GUI screens can display European languages, Japanese, Korean, Simplified Chinese, and Traditional Chinese for clip names and titles.)

Switching between GUI screens

The most important GUI screens are:

Clip thumbnail screen: Displays thumbnails of clips on the disc. “Clip” is displayed as the title at the upper left of the screen *(see page 104)*.

Clip list thumbnail screen: Displays thumbnails of sub clips in a clip list. “Clip List” is displayed as the title at the upper left of the screen *(see page 104)*.

There are also two playback screens:

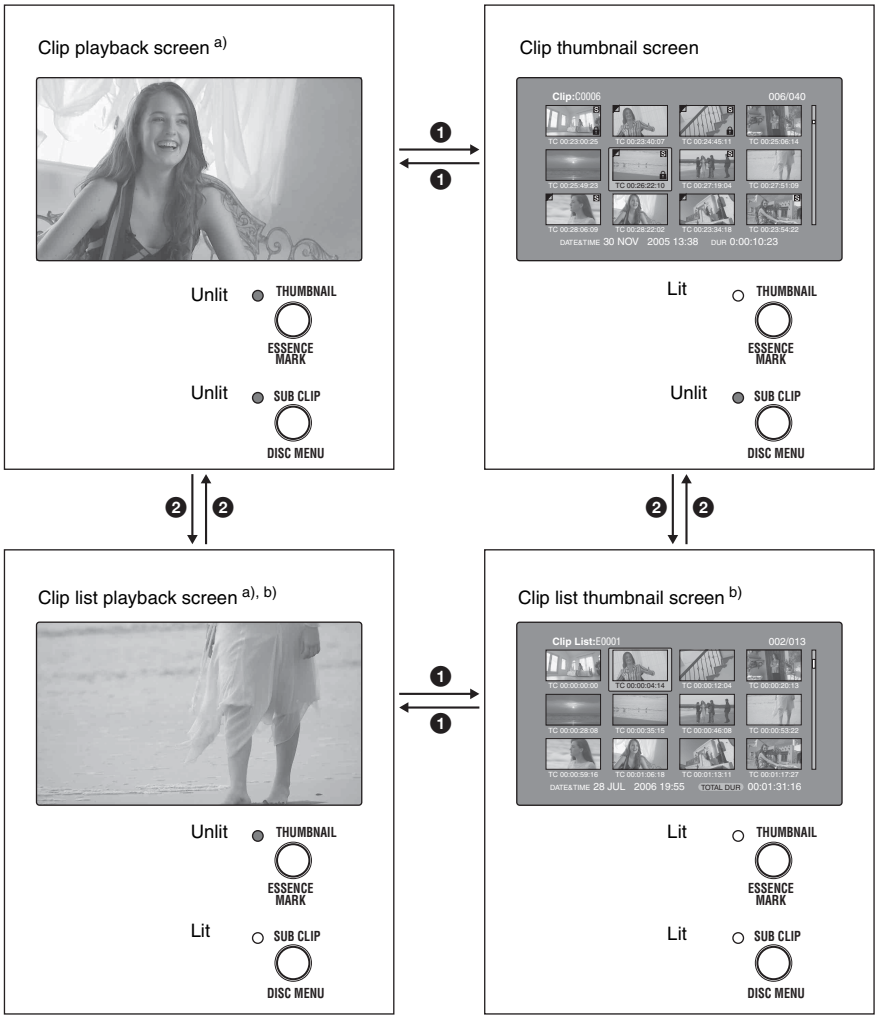
Clip playback screen: Playback screen for normal video

Clip list playback screen: Playback screen for clip list video

You will use the THUMBNAIL/ESSENCE MARK button ❶ and the SUB CLIP/DISC MENU button ❷ to switch between these four screens. Each press of these buttons switches between the screens as shown in the following figure. The THUMBNAIL and SUB CLIP indicators light as follows, according to the type of screen that is currently displayed.

Note

To switch between these four screens, a disc with recorded clips must be loaded in the unit.



a) The playback screens appear when the LCD monitor is switched to display of video with (CHAR) or without (MONI) superimposed text. Press the DISP SEL/EXPAND button to switch the LCD monitor to these modes *(see page 19)*.

b) The clip list playback screen appears when a clip list is loaded into the unit's memory *(see page 130)*.

The other thumbnail screens are:

- Expand thumbnail screen
- Chapter thumbnail screen
- Essence mark thumbnail screen

Information and controls in thumbnail screens

About the display of clip and clip list names

You can specify that titles should appear instead of names in the clip name areas of thumbnail screens. You can also change the display language.

To specify that titles *(see page 92)*, if they exist, should be displayed with higher priority than names, select one of the following under Settings >Display Title in the Disc Menu.

On: Title1 "title1": Display in the order title1, title2, clip or clip list name.

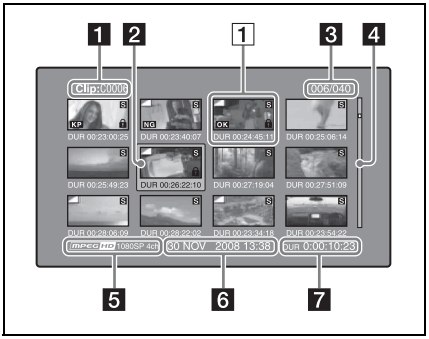
On: Title2 {title2}: Display in the order title2, title1, clip or clip list name.

To change the display language according to the area of use *(see page 37)*, select the desired language under Settings >Select Font in the Disc Menu.

Area of use setting	Select Font setting	Displayable languages
NTSC(J)AREA (Japan)	–	English/Japanese
NTSC AREA (NTSC area other than Japan) or PAL AREA	European Alphabet	English/European languages
	Korean	English/Korean
	Simplified Chinese	English/Simplified Chinese
	Traditional Chinese	English/Traditional Chinese

Clip thumbnail screen

This screen displays thumbnails of clips on the disc in the order that they were recorded. You can use this screen to work with clips – deleting or locking them, selecting their index pictures, adding them to clip lists, and so on.



1 Clip name

Displays the name or a title of the selected clip *(see page 105)*.

2 Selection frame

Indicates that the thumbnail is selected. To select another thumbnail, move the frame *(see page 113)*. Multiple selection frames appear when multiple thumbnails are selected *(see page 112)*.

3 Clip number/total number of clips

Displays the total number of clips on the disc, and the number of the selected clip.

4 Scrollbar

When not all of the thumbnails can be displayed in the thumbnail display area, the position of the slider shows the relative position of the currently displayed clips, and the length of the slider shows the relative length of currently displayed clips within all of the clips.

When you have a large number of thumbnails, you can save time by using the Skip Scroll function to jump directly to the thumbnail you want *(see page 113)*.

5 Recording format

The recording format of the selected clip is displayed as a combination of the following information.

- Video format logo
- Number of system lines
- Recording quality
- Number of audio channels

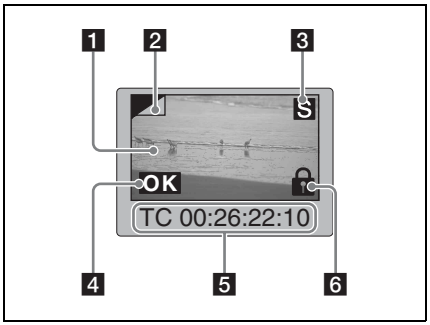
6 Clip date and time

Displays the date and time when the selected clip was shot and recorded.

7 Duration

Displays the duration (recording time) of the selected clip. When multiple clips are selected, displays the total recording time of the selected clips.

1 Thumbnail display items



1 Index picture

Displays an image to stand for the content of the clip. The index picture is normally the first frame of the clip.

2 Index picture changed mark

This mark, like the folded-over corner of a page that you want to remember, appears when the index picture has been changed to any frame other than the first frame of a clip *(see page 118)*.

Note

When you cue up a clip, the unit always cues up the first frame, even when the index picture has been changed to a different frame.

3 S mark

This mark appears when shot marks or other essence marks have been set in the clip *(see page 80)*.
The chapter thumbnail screen can be displayed for clips that show this mark *(see page 107)*.

4 Clip flag icon

Displays the corresponding icon when a clip flag (OK/NG/KP (KEEP)) is set in the clip *(see page 122)*.

5 Clip and frame information

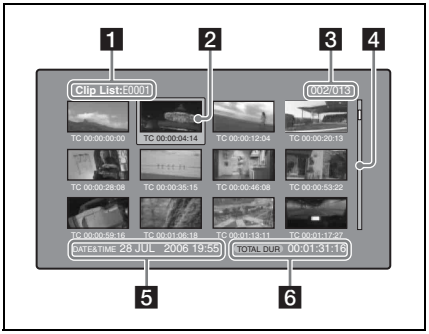
Displays the clip or frame information selected with the Clip Information item in the Thumbnail Menu *(see page 118)*. The factory default selection is the timecode of the first frame or the timecode of the thumbnail frame.

6 Lock icon

This icon appears when the clip is locked (protected) *(see page 122)*. Clips cannot be deleted and their clip information cannot be changed when this mark is displayed.

Clip list thumbnail screen

This screen displays thumbnails of the clips in the current clip list. You can use this screen to create and edit clips lists.



1 Clip list name

Displays the name or a title of the clip list *(see page 105)*.

2 Selection frame

See the description in "Clip thumbnail screen" (page 105).

3 Sub clip number/number of sub clips

Displays the total number of sub clips in the clip list, and the number of the selected sub clip.

4 Scrollbar

See the description in "Clip thumbnail screen" (page 105).

5 Clip list date and time

Displays the date and time when the clip list was created, or the date and time of its most recent modification. An asterisk (*) appears after the date and time of creation when the current clip list has not been saved to the disc.

Notes

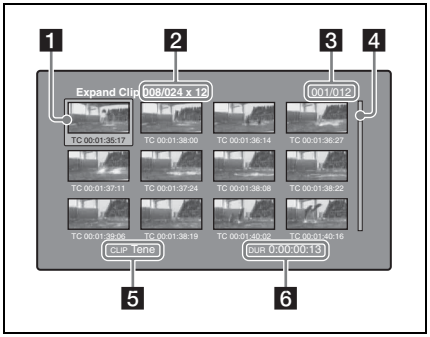
- "New File" appears when no clip list has been loaded into the unit's memory, and when a clip list has been cleared from the unit's memory.
- A mark appears before the date of creation or modification when a disc is write inhibited. You can create clip lists when the disc is write inhibited, but you cannot save them.

6 Total duration

Displays the total duration of all sub clips in the clip list.

Expand thumbnail screen

This screen displays thumbnails of equally sized divisions of the selected clip.



1 Selection frame

See the description in "Clip thumbnail screen" (page 105).

2 Clip number/total clips x number of divisions

Displays the number of the selected clip, the total number of clips on the disc, and the number of times that the selected clip has been divided to display the expansion thumbnails.

3 Thumbnail number/total thumbnails

Displays the total number of expanded thumbnails and the number of the selected thumbnail.

4 Scrollbar

See the description in "Clip thumbnail screen" (page 105).

5 Clip name

Displays the name or a title of the expanded clip *(see page 105).*

6 Duration

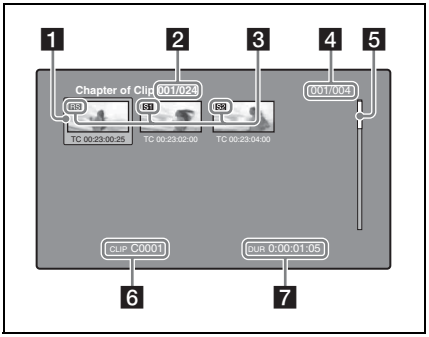
Displays the time from the selected thumbnail to the next one.

Chapter thumbnail screen

Chapters are the sections between the shot marks, Rec Start marks, and other essence marks that have been recorded in clips. This screen allows you to display thumbnails of the chapters in the selected clip.

Note

Shot marks can be set by the user during recording and playback. They can be deleted and moved.
Essence marks other than shot marks are set automatically. They cannot be deleted or moved.



1 Selection frame

See the description in "Clip thumbnail screen" (page 105).

2 Clip number/total clips

Displays the total number of clips on the disc and the number of the clip that contains the displayed chapters.
If the essence mark name is a user-defined name, it is displayed between quotation marks, for example as [Chapter: "Touch Down"] *(see page 134).*

3 S1/S2/RS marks

The "S1", "S2", and "RS" marks on the thumbnails indicate frames where Shot Mark1, Shot Mark2, and Rec Start essence marks are set.

4 Chapter number/total chapters

Displays the total number of chapters and the number of the selected chapter.

Note

The total number of chapters is the total number of chapters in the specified clip only.

5 Scrollbar

See the description in "Clip thumbnail screen" (page 105).

6 Clip name

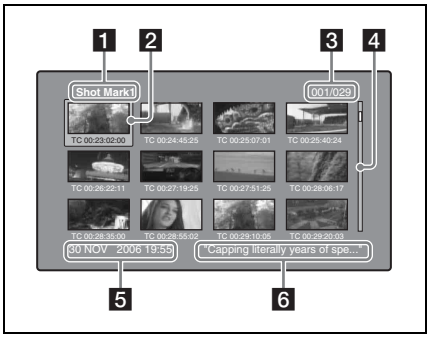
Displays the name or a title of the clip whose chapter is displayed *(see page 105)*.

7 Duration

Displays the time from the first frame of the selected chapter to the first frame of the next chapter.

Essence mark thumbnail screen

This screen displays thumbnails of the specified essence mark, found by searching all clips on the disc.



1 Essence mark name

Displays the name of the essence mark (Shot Mark1 here). If the shot mark name has been defined by the user, it is enclosed in quotation marks (" ") in the display *(see page 134)*.

2 Selection frame

See the description in "Clip thumbnail screen" (page 105).

3 Essence mark number/total essence marks

Displays the total number of essence marks and the number of the selected essence mark.

Note

The total number of essence marks is the total number of essence marks that have been set in all clips on the disc.

4 Scrollbar

See the description in "Clip thumbnail screen" (page 105).

5 Clip date and time

Displays the date and time when the clip that contains the selected thumbnail was recorded or last modified.

6 Clip name

Displays the name or a title of the clip that contains the selected frame *(see page 105)*.

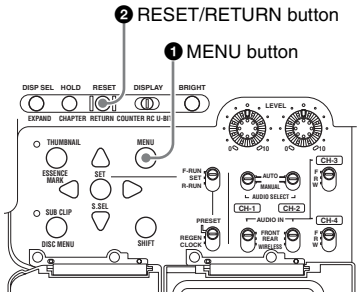
Displaying menus

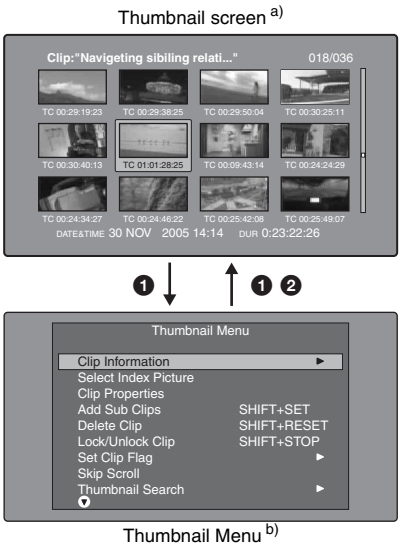
Thumbnail Menu

The Thumbnail Menu displays menu items that are valid for the currently displayed thumbnail screen.

To display the Thumbnail Menu

To display the Thumbnail Menu, press the MENU button with a thumbnail screen displayed. To return to the original screen, press the MENU button again, or press the RESET/RETURN button.





a) Clip thumbnail screen

b) Thumbnail Menu of the clip thumbnail screen

Shortcut operations

Shortcut button names are displayed next to the menu items of commands that have shortcuts *(see page 145)*.

Note

Shortcuts displayed within parentheses should be used with all menus closed.

Thumbnail Menu submenus

- The Thumbnail Search Menu contains the basic commands for thumbnail searches.
- The Thumbnail View Menu contains the basic commands for moving to other menus.

Disc Menu

The Disc Menu allows you to do the following. (Underlined values in the Operation/Setting column are the factory defaults.)

Item		Operation/Setting
Load Clip List		Load clip list into this unit's memory.
Save Clip List		Save a clip list to the disc under its current name, overwriting the old contents.
Save Clip list as...		Save a clip list to the disc under a new name.
Delete Clip List		Delete a clip list from the disc.
Clear Clip List		Clear the current clip list from the unit's memory.
Load Planning Metadata/Select Drive		Select a media disc or drive and load planning metadata into this unit's memory.
Planning Metadata Properties		Display the properties of the currently loaded planning metadata.
Planning Clip Name Suffix		Change the serial number added to clip names created by using planning metadata.
Clear Planning Metadata		Clear the currently loaded planning metadata from the unit's memory.
Lock or Delete All Clips	**Sub-Item**	
	Lock All Clips	Lock all clips.
	Unlock All Clips	Unlock all clips.
	Delete All Clips	Delete all clips.
Delete All Voice		Delete all voice data.
Disc Properties		Display the properties of the currently loaded disc. Or edit the user disc ID, title 1, and title 2.
Format Disc		Format (initialize) the currently loaded disc.
Download Clip via Direct FTP		Used to send clip to and from remote devices and remote computers.

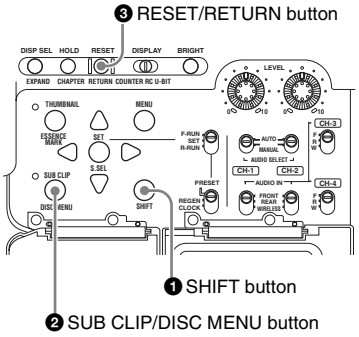
Item		Operation/Setting
Settings	**Sub-Item**	
	SET Key on Thumbnail	Selects the behavior of the unit when the SET/S.SEL button or MENU knob is pressed with one thumbnail selected. **Cue up & Still:** Cue up the selected thumbnail. **Cue up & Play:** Cue up and play the selected thumbnail.
	Sort Clip List by...	Selects a method to sort the clip list. **Name (A-Z):** Sort in ascending alphabetic order. **Date (Newest First):** Sort by date and time of creation, newest clip list first.
	Sort Planning Metadata by...	Selects a method to sort the planning metadata. **Name (A-Z):** Sort in ascending alphabetic order. **Date (Newest First):** Sort by date and time of creation, newest planning metadata first.
	Display Title	Selects whether to display clip and clip list titles. **On: Title1 "title1"**: Display the title in the following order of priority: Title1, Title2, Clip name or Clip list name. **On: Title2 {title2}:** Display the title in the following order of priority: Title2, Title1, Clip name or Clip list name. **Off:** Do not display the title. Always display the clip name or clip list name.
	Planning Clip Name in Clip Info. Area	Selects how to display in the video monitor screen the title contained in a planning metatdata file that is loaded into this unit. **ASCII Clip Name:** Display title in ASCII format. **Clip Name:** Display title in UTF-8 format.
	Planning Clip Name Display	Selects whether to display in the video monitor screen the title contained in a planning metatdata file that is loaded into this unit. **Disable:** Do not display titles. **Enable:** Display titles.
	Setting Format Disc	Selects whether to disable the Format Disc command. **Disable:** Disable the command. **Enable:** Enable the command.
	Select Font	Selects the language (font) used to display clip names, clip list names, and title2 clip titles.
	Select USB Keyboard Language	Selects the language of the USB keyboard used in the software keyboard screen.
	Select Mouse Pointer Speed	Selects the speed of the USB mouse pointer used in the software keyboard screen from among the following. 5 Fast/4/3 Middle/2/1 Slow

To display the Disc Menu

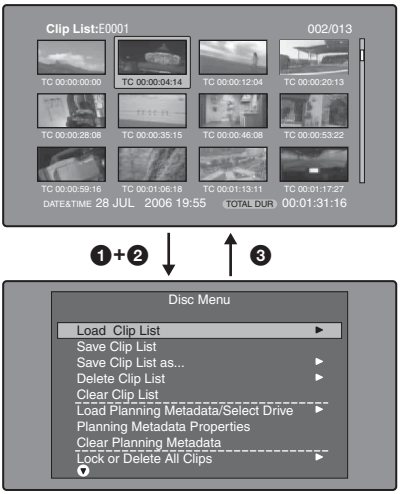
To display the Disc Menu, press the SUB CLIP/DISC MENU button with the SHIFT button held down in one of the following screens.

- Clip thumbnail screen
- Clip list thumbnail screen
- Clip playback screen
- Clip list playback screen

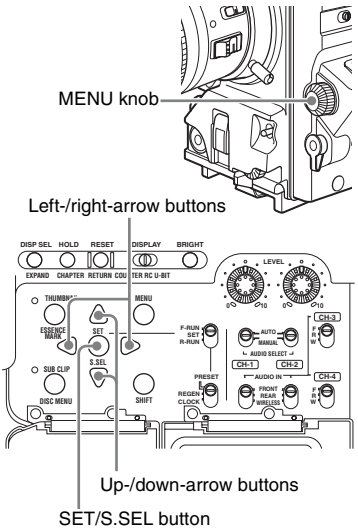
To return to the original screen, press the RESET/RETURN button.



Clip list thumbnail screen



GUI screen operations



To select items

Do one of the following to select thumbnails, menu items, timecode digits, and other items.

- Turn the MENU knob.
- Press the up-, down-, left-, or right-arrow button.
- Press the PREV or NEXT button.
- With the SHIFT button held down, press the PREV or NEXT button (to move to the first or last item).
- Press the PREV button with the F REV button held down, or press the NEXT button with the F FWD button held down (to move to the first or last item).
- With the SHIFT button held down, press the up- or down-arrow button (to move to the previous or next page).
- Press the F REV or F FWD button (to move to the previous or next page).

To select multiple thumbnails

Do one of the following.

- With the SHIFT button held down, turn the MENU knob.
- With the SHIFT button held down, press the left- or right-arrow button.

To return to the previous screen

Press the RESET/RETURN button.

To move from a menu level to the next lower or higher menu level

For a menu item displayed together with a ▶ or ◀ mark, you can move to the next lower or higher menu level by pressing the right- or left-arrow button.

To scroll hidden parts of the string into view

When a ▶ or ◀ mark is displayed for an item, you can press the left or right arrow button to scroll the display by one character for each press.
The up and down arrow buttons scroll the beginning and end of the string into view.

To increment and decrement numbers

Do one of the following.
- Press the up- or down-arrow button.
- Turn the MENU knob.

To confirm selections

Press the SET/S.SEL button or the MENU knob.

Thumbnail Operations

You can use thumbnail screens to display clip information and to find, protect, and delete clips. The thumbnails provide visual confirmation of these and other operations.

Selecting thumbnails

The thumbnail selection frame *(see page 105)* indicates the currently selected thumbnail.

To move the thumbnail selection frame

Turn the MENU knob, or press the arrow buttons.

To skip quickly through thumbnails (Skip Scroll function)

When you have a large number of thumbnails, like in expand thumbnail screen, you can use the Skip Scroll function to skip through them quickly.

See page 112 for more information about operations in thumbnail screens.

1 **In the screens like clip thumbnail screen or expand thumbnail screen, display the Thumbnail Menu.**

2 **Select Skip Scroll, and then press the SET/S.SEL button or the MENU knob.**
A small popup window appears on the scrollbar to indicate the position of the currently selected thumbnail within the set of all thumbnails.

3 Turn the MENU knob, or press the up or down-arrow button.
The current position moves by an amount equal to $^{1}/_{10}$ of the total number of thumbnails.

4 Press the SET/S.SEL button or the MENU knob at the new position.
The thumbnail at the position indicated in the small popup window appears in a thumbnail screen like the following [1)].

1) Expand thumbnail screen

To select multiple thumbnails

Move the selection frame to the first thumbnail that you want to select. Then, with the SHIFT button held down, Turn the MENU knob, or press the right-arrow button.
To cancel the multiple selection, move the selection frame without the SHIFT button held down.

Searching with thumbnails

By using the thumbnails that appear in the various thumbnail screens, you can easily cue up and play clips and sub clips.

Using thumbnails to find clips

The clip thumbnail screen displays thumbnails of all clips recorded on the disc. You can use this screen to cue up the selected clip and to carry out playback *(see page 116)*.

See "Selecting thumbnails" (page 113) for more information.

Using the expand function to find scenes

The expand function allows you to divide a selected clip into equally sized blocks, and to display thumbnails of the first frame in each block. This is a quick and efficient way to review the selected clip and search for target scenes. You can specify 12, 144, or 1728 divisions.

Note

The maximum number of blocks may be other than 1728 when the recorded duration of the clip is short. In this case, the frame interval of expanded thumbnails is fixed at 1 frame. This allows you to view expanded thumbnails at equal intervals.

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of the clip that contains the scene you want to find.

2 Press the DISP SEL/EXPAND button.
The selected clip is divided into 12 blocks, and a list appears in the expand thumbnail screen *(see page 107)* with the first frame of each block displayed as a thumbnail.

3 Select the thumbnail that you want to expand further.

4 Repeat steps 2 and 3 up to twice, as required.

Note

Thumbnails cannot be further expanded when they already have the minimum duration (1 frame).

To return to the previous expansion level

Press the DISP SEL/EXPAND button with the SHIFT button held down.

To display the expand thumbnail screen of the previous or next clip

With the expand thumbnail screen still active, press the PREV button or the NEXT button.

Using the chapter function to find scenes

Chapters are the sections between the shot marks, Rec Start marks, and other essence marks.
Rec Start essence marks are set automatically at the start of recording, but shot marks can be set at any scene during recording or playback.
The chapter function allows you to display thumbnails of the chapters in a clip.

See "Recording essence marks" (page 80) for more information.

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of a clip with chapters set.
The "S" mark appears on the thumbnails of clips with chapters set.

2 Press the HOLD/CHAPTER button.
The chapter thumbnail screen *(see page 107)* appears, with thumbnails of the frames where chapters are set.
The "S1", "S2", and "RS" marks on the thumbnails indicate frames where Shot Mark1, Shot Mark2, and Rec Start essence marks are set.

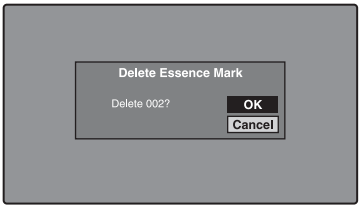
To delete the shot mark at a chapter position

You can delete the shot mark (Shot Mark0 to Shot Mark9) at the chapter position in the chapter thumbnail screen. (Rec Start essence marks cannot be deleted.)

1 In the chapter thumbnail screen, select the thumbnail for the frame whose shot mark you want to delete.

2 Display the Thumbnail Menu.

3 Select Delete Essence Mark.
A message appears asking if you are sure that you want to delete the shot mark.



4 Select OK to delete the mark, or Cancel to cancel the deletion, and then press the SET/S.SEL button or the MENU knob.

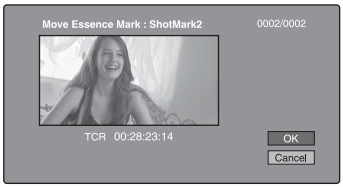
To adjust the position of shot marks at chapter positions

You can use the chapter thumbnail screen to adjust the position of shot marks (Shot Mark0 to Shot Mark9) at chapter positions. (The positions of Rec Start essence marks cannot be adjusted.)

1 In the chapter thumbnail screen, select the thumbnail of the shot mark whose position you want to adjust.

2 Display the Thumbnail Menu.

3 Select Move Essence Mark.
The Move Essence Mark screen is displayed.



You can perform playback and searches in this screen.

4 Use the PLAY/PAUSE button or F REV/F FWD buttons to display the frame you want.
You can also perform jog playback by turning the MENU knob.

5 Select OK, and then press the SET/S.SEL button or the MENU knob.

To display the chapter thumbnail screen of the previous or next clip with chapters

With the chapter thumbnail screen still active, press the PREV button or the NEXT button.
The unit searches in the reverse or forward direction for the next clip with chapters, beginning with the previous or next clip.

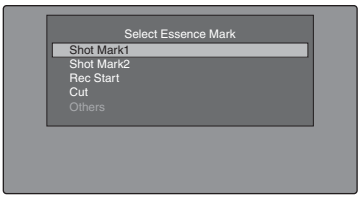
Using essence marks to find scenes

See page 112 for more information about thumbnail screen operations.

1 In the clip playback screen or the clip thumbnail screen, press the

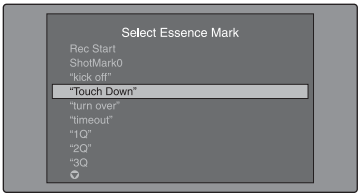
THUMBNAIL/ESSENCE MARK button with the SHIFT button held down.

The Select Essence Mark screen appears. The names of essence marks that are not recorded on the disc are displayed in gray.



If planning metadata with user-defined essence mark has been loaded

You can select user-defined essence marks *(see page 134)*.



2 Select the essence mark that you want, and then press the SET/S.SEL button or the MENU knob.

The essence mark thumbnail screen *(see page 108)* displays a list of frames where the selected essence mark is set.

To switch directly to the Rec Start essence mark thumbnail screen

Before starting, set FIND MODE in the ESSENCE MARK page of the MAINTENANCE menu to "R.ST".

When the Rec Start essence mark thumbnail screen is displayed, each press of the THUMBNAIL/ESSENCE MARK button switches between that screen and the clip playback screen (Resume function). This setting allows you to use the THUMBNAIL/ESSENCE MARK button as a shortcut to Rec Start essence mark thumbnail screen, which is convenient for checking start points in clip recorded with the Clip Continuous Rec function.

To return to the clip thumbnail screen from the Rec Start essence mark thumbnail screen, press the RESET/RETURN button.

In the clip playback screen, the PREV and NEXT buttons jump to the previous or next recording start points.

Playing the scene you have found

After finding a clip with one of the methods explained in the previous section, "Searching with thumbnails" *(page 114)*, you can cue up and play the clip that you have found.

To search for a thumbnail position and cue it up

See page 112 for more information about GUI screen operations.

1 Select the thumbnail that you want to cue up.

2 Press the SET/S.SEL button or the MENU knob.

To play clips with the SET/S.SEL button

In the Disc Menu, set Settings >SET Key on Thumbnail to "Cue up & Play". Play begins from the selected frame when you press the SET/S.SEL button, in the same way as when you press the PLAY/PAUSE button.

To search for a thumbnail position and play from there

See page 112 for more information about GUI screen operations.

1 Select the thumbnail that you want to play.

2 Press the PLAY/PAUSE button.

Selecting clips by type (Filter Clips function)

You can select clips of a certain type from among all of the clips on a disc (Filter Clips function). For example, you can do the following.

- Select clips in a certain video format from a disc that contains clips in different video formats.
- Select clips that have been set “NG” as a clip flag, and delete all of those clips in one operation.
- Select only clips that have been recorded on the basis of a specified planning metadata entry, and transfer those clips to an external device using the Direct FTP function *(see page 138)*.

To filter clips

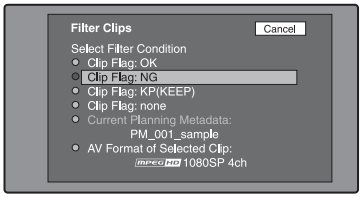
See page 112 for more information about thumbnail screen operations.

1 Display the clip thumbnail screen.

2 If you want to select clips by video format, select the thumbnails of clips in that format.

3 Display the Thumbnail menu.

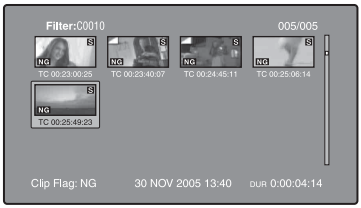
4 Select “Filter Clips”, and then press the SET/S.SEL button or the MENU knob.
The Filter Clips screen appears.



5 Select the clip filtering condition.

Item name	Filtering condition
Clip Flag: OK	Clip flag set in the clip (OK/NG/KP(KEEP)/ none)
Clip Flag: NG	
Clip Flag: KP(KEEP)	
Clip Flag: none	
Current Planning Metadata	Clips that have been recorded according to the instructions in the currently loaded planning metadata
AV Format of Selected Clip	Video format of the selected clips

6 Press the SET/S.SEL button or the MENU knob.
A filter thumbnail screen appears, showing only clips that meet the specified condition. The filtering condition appears at the lower left of the screen.



7 If you want to filter the clips again with a different filtering condition (to narrow down the filtering results), repeat steps 2 to 6. (The command name selected in step 4 changes to Filter Clips(Narrowing).)

To play selected clips continuously

Register all of the filtered clips in an automatically generated clip list, and play the clip list.

1 Display the Thumbnail Menu in the filter thumbnail screen.

2 Select “Copy to Clip List”, and then press the SET/S.SEL button or the MENU knob.
A clip list thumbnail screen appears, showing filtered clips that have been registered in the clip list.

3 Press the PLAY/PAUSE button.
The screen changes to the clip playback screen, and playback starts.

Operations on filtering results

You can use the Thumbnail Menu in the filter thumbnail screen to perform the following operations.

Item name	Function
Clip Information	Select the information to be displayed at the bottom of the thumbnails.
Lock or Delete All Filtered Clips >Lock All Filtered Clips	Lock all of the filtered clips.
Lock or Delete All Filtered Clips >Unlock All Filtered Clips	Unlock all of the filtered clips.
Lock or Delete All Filtered Clips >Delete All Filtered Clips	Delete all of the filtered clips.
Filter Clips(Narrowing)	Narrow down the filtering results.
Copy to Clip List	Copy all of the filtered clips to a new clip list.
Upload Clips via Direct FTP	Transfer all of the filtered clips to an external device via a network.

To display clip filtering conditions as Title2 titles

For clip lists created with the Copy to Clip List command, you can display the clip filtering conditions as Title2 titles.
When Settings >Display Title in the Disc Menu is set to “On: Title2 {title2}”, the clip filtering conditions are displayed automatically in screens such as the Load Clip List screen.

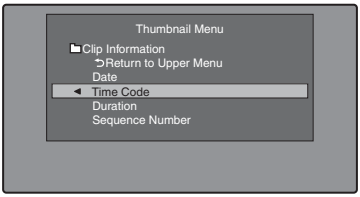
Selecting the information displayed on thumbnails

You can select the information to be displayed at the bottom of the thumbnails in thumbnail screens.

See page 112 for more information about thumbnail screen operations.

1 Display the Thumbnail Menu in the clip thumbnail screen.

2 Select Clip Information.
A window appears in which you can select the information to display.



3 Select the items that you want to display.
Return to Upper Menu: Returns to the Thumbnail Menu
Date: Date and time of creation, or date and time of the more recent modification
Time Code: Timecode of first frame
Duration: Playback time
Sequence Number: Thumbnail sequence number
The selected information will appear at the bottom of the thumbnails when you display a thumbnail screen.

Changing clip index pictures

The clip thumbnail screen displays thumbnails as index pictures for clips. Normally the index picture is the first frame in a clip, but you can set any frame in the clip as the index picture.

Note

You can only change index pictures from the clip thumbnail screen. The thumbnails shown in the clip list thumbnail screen, the expand thumbnail screen, and the chapter thumbnail screen cannot be changed.

To select a clip index picture while viewing the video

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of the clip whose index picture you want to change.

2 Display the Thumbnail Menu.

3 Select Select Index Picture.
Select Index screen appears.

You can play and search with this screen.

4 Use the PLAY/PAUSE button or F REV/F FWD buttons to display the frame you want.
You can also perform a jog operation by turning the MENU knob.

5 Press the up-arrow button to select OK, and then press the SET/S.SEL button or the MENU knob.

To select index pictures by using the expand and chapter functions

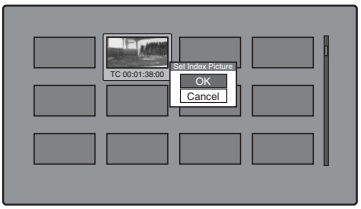
After using the expand function *(see page 114)* or chapter function *(see page 115)* to find a frame, you can set that frame as the index picture of the clip.
The following example explains how to do so from the expand thumbnail screen.

See page 112 for more information about thumbnail screen operations.

1 In the expand thumbnail screen, select the thumbnail to set as the index picture.

2 Display the Thumbnail Menu.

3 Select Set Index Picture.
A message appears asking you to confirm that you want to set the current frame as the index picture.



4 Select OK, and then press the SET/S.SEL button or the MENU knob.
After pressing the RESET/RETURN button to return to the clip thumbnail screen, check to make sure that the newly selected frame is displayed as the index picture.

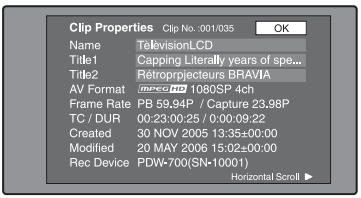
Checking clip properties

You can check clip properties such as the title, timecode, duration, date and time of creation, and date and time of the more recent modification.

See page 112 for more information about thumbnail screen operations.

1 Display the Thumbnail Menu in the clip thumbnail screen.

2 Select Clip Properties.
The Clip Properties screen appears.



Clip No.: Clip number/total number of clips
Name: Clip name [1)]
Title1: Title 1
Title2: Title 2 [1)]
AV Format: Recording format
Frame Rate: The frame rate from the time when the clip was shot. For clips shot using Slow & Quick Motion, PB/Capture, where PB is the playback frame rate and Capture is the shooting frame rate.

TC/DUR: Timecode of the first frame/ Recording time
Created: Date and time of creation
Modified: Date and time of most recent modification
Rec Device: Name of device that created clip (product number)

1) Titles can be displayed in European languages when the area of use *(see page 37)* is set to "NTSC AREA" or "PAL AREA".

To scroll hidden parts of the string into view

When a ▶ or ◀ mark is displayed for an item, you can press the left or right arrow button to scroll the display by one character for each press.
The up and down arrow buttons scroll the beginning and end of the string into view.

To display the properties of the previous or the next clip

Press the PREV button or the NEXT button.

To return to the clip thumbnail screen

Press the SET/S.SEL button or the MENU knob.

To edit clip information

You can edit the name, [1] title 1, and title 2 of a clip by using a software keyboard.

1) The NAMING FORM item on the FILE NAMING page of the OPERATION menu must be set to FREE *(see page 159)*.

Notes

- The only characters that can be entered are the alphanumeric characters and symbols that appear on the software keyboard, and characters in the fonts supported by this version of the unit's firmware. Japanese kanji cannot be entered.
- Names and titles must be within the specified character length limits.
- Some symbols cannot be used in clip names. The keys for those symbols are disabled when you are editing a clip name.

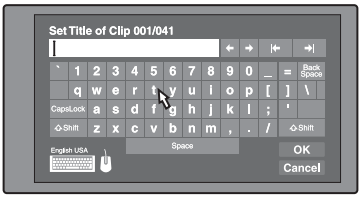
See page 112 for more information about GUI screen operations.

1 In the Clip Properties screen, turn the MENU knob to select the item you want to edit (Name, Title1 [1], or Title2).

1) Only ASCII characters can be used for Title1.

2 Press the SET/S.SEL button or the MENU knob.

An input screen appears for the selected item. (A keyboard appears that corresponds to the font selected with Disc Menu item Settings >Select Font if the area of use setting is NTSC AREA or PAL AREA. A Japanese keyboard appears if the area of use setting is NTSC(J)AREA.)



3 Edit the string in the edit box.

To enter characters

Use the arrow buttons or turn the MENU knob to select a key, and then press the SET/S.SEL button or the MENU knob.

Functions of special keys

Key	Function
←, →	Move the cursor one character forward or back.
⇤ , ⇥	Move the cursor to Home or End position.
Back Space	Deletes the character in front of the cursor.
CapsLock	Turns the Shift key on permanently (until pressed again), and enables input of capital letters and symbols.
⇧Shift	Enables input of capital letters and symbols. Turns off after entry of one character.

4 Select OK, and then press the SET/S.SEL button or the MENU knob.

You return to the Clip Properties screen, and the results of the editing are reflected in the clip information.

To enter text using a USB keyboard or USB mouse

You can connect a Windows USB keyboard or a Windows USB mouse to the USB connector *(see page 26)* [1], and use them together with the software keyboard to enter text.
Connect a Japanese keyboard if the area of use has been set to NTSC(J)AREA. [2]

Connect a keyboard that corresponds to the font selected with Disc Menu item Settings >Select Font if the area of use has been set to NTSC AREA or PAL AREA.

1) Some USB keyboards or USB mice may not be recognized. In this case, the message “Unknown USB” appears.
2) Only ASCII characters can be entered from a Japanese keyboard.

To change the display language (font) for clip names, clip list names, and title2 clip titles: Select one of the following languages (fonts) with the Disc menu item Settings >Select Font.

- European Alphabet: The keyboard language can be selected with the Disc Menu item Settings >USB Keyboard Language *(see following section)*.
- Korean: The Korean keyboard is selected automatically. You can enter Hangul characters if you have connected a Korean USB keyboard.
- Simplified Chinese: The keyboard layout is identical to that of the English [United States] keyboard. Only ASCII characters can be entered.
- Traditional Chinese: The keyboard layout is identical to that of the English [United States] keyboard. Only ASCII characters can be entered.

To change the keyboard language: In the Disc Menu, select Settings >Select USB Keyboard Language and then select the desired keyboard from among the following.

- English [United Kingdom]
- English [United States]
- French [France]
- German [Germany]
- Italian [Italy]
- Polish (Programmers) [Poland]
- Russian [Russia]
- Spanish [Spain]

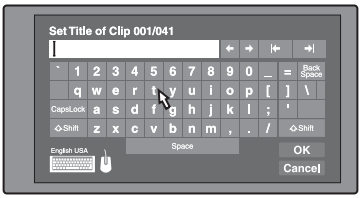
See “List of Supported USB Keyboards” (page 262) for the characters that can be entered on the various language keyboards.

Note

The keyboard language cannot be changed in the following cases.

- When the area of use is set to NTSC(J)AREA.
- When the area of use is set to NTSC AREA or PAL AREA, and the Disc Menu item Settings >Select Font is set to Korean, Simplified Chinese, or Traditional Chinese.

The keyboard icon on the software keyboard is highlighted when a USB keyboard has been recognized and enabled for use with this unit, and the mouse icon is highlighted and a mouse pointer appears when a USB mouse has been enabled.



Notes

- Use the proper keyboard for the area of use. Some characters may not be entered correctly if you use a keyboard designed for use in another area.
- It is not possible to enter Japanese, even on a Japanese keyboard.

USB keyboard special functions keys

In addition to the special function keys of the software keyboard, you can use the following special function keys on a USB keyboard.

Key	Function
↑, ↓	**When the cursor is in an edit box:** Move the cursor to the start or end. **When “OK” or “Cancel” has the focus:** Moves the focus between “OK” and “Cancel”.
Delete	Deletes the character after the cursor.
Shift + ←, Shift + →	Selects the string before or after the cursor.
Ctrl + C, X, V, A, Z	**Ctrl + C:** Copies the selected string. **Ctrl + X:** Cuts the selected string. **Ctrl + V:** Pastes a copied or cut string. **Ctrl + A:** Selects the entire string. **Ctrl + Z:** Undoes the immediately preceding operation.
Enter	**When the cursor is in an edit box:** Moves the focus to “OK”. **When “OK” or “Cancel” has the focus:** Exits the software keyboard.
Esc	When the cursor is in an edit box, moves the focus to “Cancel”.
Tab	Moves the focus between “OK” and “Cancel”.

USB mouse functions

You can use the mouse to move the cursor on the software keyboard. You can also left click on a key to enter the character for that key.

To change the speed of the mouse pointer: In the Disc Menu, select Settings >Select Mouse Pointer Speed and then select the desired speed. Adjust according to the selected mouse.

To exit the software keyboard from a USB keyboard

1 With the cursor in an edit box, press the Enter key to move the focus to "OK".

2 Do one of the following.

To confirm the edit and then exit the software keyboard: While "OK" is selected, press the Enter key.

To discard the edit and then exit the software keyboard: On the USB keyboard, press the ↓ key or the Tab key to move to "Cancel", and then press the Enter key.

To continue editing: Press any key except the Enter key, the Esc key, and the Tab key.

Setting clip flags

You can set three types of clip flags (OK/NG/KP (KEEP)) during recording or playback. Setting these flags in each clip that you record makes it easy for editors and other colleagues to find and select the clips they need.

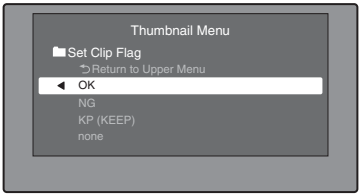
See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of the clip where you want to set a flag.

2 Display the Thumbnail Menu.

3 Select "Set Clip Flag".

The clip flag setting screen appears.



4 Select the clip flag that you want to set (OK/NG/KP (KEEP)).

A clip flag icon *(see page 106)* appears for clips that have clip flags set.

To clear clip flags

Carry out steps **1** to **3**, selecting a clip that has a flag set, and then select "none" in step **4**.

You can also use switches to set and clear clip flags. For details, see "Setting clip flags with switches" (page 80).

Locking (write-protecting) clips

In a clip thumbnail screen, you can lock the selected clips so that they cannot be deleted or altered.

Locking prevents the following operations on clips.

- Deletion
- Renaming by FTP
- Changing the index picture
- Adding and deleting shot marks
- Setting and clearing clip flags

Notes

- Locked clips are deleted along with other clips when a disc is formatted.
- Clips cannot be locked or unlocked when the Write Inhibit tab of the disc is set to the recording disabled position.

To lock clips

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnails of the clips that you want to lock.

2 Display the Thumbnail Menu.

3 Select Lock/Unlock Clip.

4 Press the SET/S.SEL button or the MENU knob.
A lock icon *(see page 106)* appears on the thumbnail of the locked clips.

In step **1**, you can also perform a shortcut operation by pressing the STOP button with the SHIFT button held down.

To lock all clips

1 Display the Disc Menu.

2 Select Lock or Delete All Clips, and then select Lock All Clips.
A message appears asking you to confirm locking all clips.

3 Select OK to lock all clips or Cancel to cancel it, and then press the SET/S.SEL button or the MENU knob.

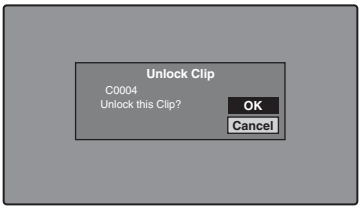
To unlock a specific clip

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of the clip that you want to unlock.

2 Display the Thumbnail Menu.

3 Select Lock/Unlock Clip.
A message appears asking you to confirm the unlocking.



4 Select OK, and then press the SET/S.SEL button or the MENU knob.

In step **1**, you can also perform a shortcut operation by pressing the STOP button with the SHIFT button held down.

To unlock all clips

1 Display the Disc Menu.

2 Select Lock or Delete All Clips, and then select Unlock All Clips.
A message appears asking you to confirm that you want to unlock all clips.

3 Select OK to execute the unlock, or Cancel to cancel it, and then press the SET/S.SEL button or the MENU knob.

Deleting clips

You can delete clips while checking their contents.

Notes

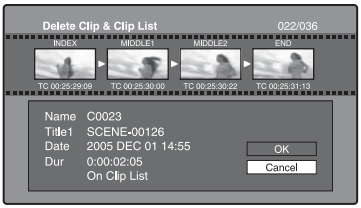
- Clips cannot be deleted when the Write Inhibit tab of the disc is set to the recording disabled position.
- Locked clips cannot be deleted.
- If a deletion target clips is referenced by clip lists on the disc, all of those clip lists are deleted as well.
- If a deletion target clip is referenced in the current clip list, only those referencing sub clips are deleted at the same time as the deletion target clip.

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the thumbnail of the clip that you want to delete.

2 Display the Thumbnail Menu.

3 Select Delete Clip.
A window appears asking you to confirm the deletion. The window displays thumbnails of four frames from the target clip (the first frame, two intermediate frames, and the last frame), along with the name, title 1, date of creation, and duration of the clip.
One of the following messages also appears, depending on whether the clip is referenced in a clip list.
When the clip is not referenced in a clip list: "Delete Clip"
When the clip is referenced in a clip list: "Delete Clip & Clip List" (All clip lists that reference the target clip are deleted along with the clip.)



4 Select OK, and then press the SET/S.SEL button or the MENU knob.
The selected clip is deleted, and you return to the clip thumbnail screen.

In step **1**, you can also perform a shortcut operation by pressing the RESET/RETURN button with the SHIFT button held down.

To delete all clips

1 Display the Disc Menu.

2 Select Lock or Delete All Clips, and then select Delete All Clips.
A message appears asking you to confirm that you want to delete all clips.

3 Select OK to execute the deletion, or Cancel to cancel it, and then press the SET/S.SEL button or the MENU knob.

Note

Locked clips cannot be deleted.

Scene Selection (Clip List Editing)

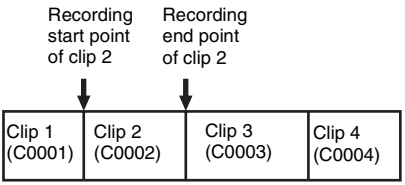
What is scene selection?

Scene selection is a function which allows you to select material (clips) from the material recorded on a disc and perform cut editing. You can do this by operating on this unit only.

- Scene selection is a convenient way to perform cut editing in the field and in other offline situations.
- In scene selection you create a clip list (editing data). Since the material itself is not affected, you can repeat this any number of times.
- You can play back the edit list created by scene selection on this unit.
- In scene selection you can add whole clips or add parts of a clip. You can add scenes using chapters, change the playback sequence, and amend or delete In and Out points. All of these operations can be carried out easily on this unit.
- Clip lists (editing data) created with the scene selection function can be used on XPRI and other full-feature nonlinear editing systems.

Clips

Material recorded with this unit is managed in units called clips. A clip contains the material from a recording start point to a recording end point.
Clips have numbers beginning with C, for example C0001.



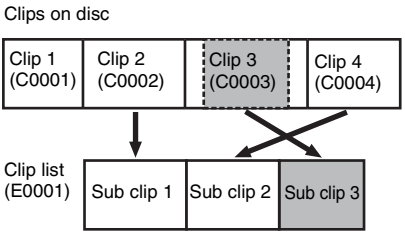
You can also assign titles to your clips and use the titles to manage them, instead of the clip numbers. For more information, see "Assigning user-defined clip titles automatically" (page 89).

Clip lists

You can use the scene selection function to select clips from the clips saved on a disc and create a cut edit list called a “clip list”.
Clip lists have numbers beginning with E, for example E0001. Up to 99 clip lists can be saved on a disc.

Sub clips (clips in clip lists)

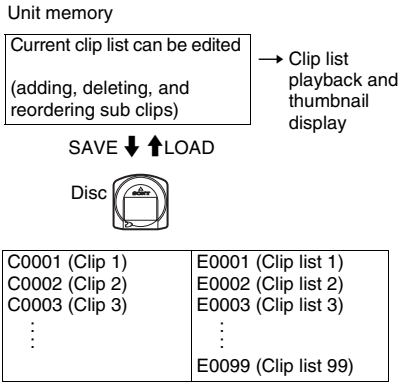
Clips (or parts of clips) that have been added to a clip list are called “sub clips”. Sub clips are virtual editing data that specify ranges in the original clips. You can use them without modifying the original data.
The following figure illustrates the relation between clips and sub clips.



In the above example, the whole of clip 2 has been added as sub clip 1, and the whole of clip 4 has been added as sub clip 2.
Sub clip 3 is part of clip 3. Therefore, when clip list E0001 is played back, clip 4 is played after clip 2, and then the part of clip 3 shown in gray color is played.

Clip list editing (current clip list)

To edit a clip list, you need to load the clip list from the disc into the unit’s internal memory. The clip list which is currently loaded into the unit memory is called the “current clip list”.
The current clip list is always the target of sub clip creation and editing. Clip list playback also uses the current clip list.
After creating and editing a clip list, you need to save it to disc.



Clip list playback

Clips and clip lists are saved together on a disc.
To play a clip list, insert a disc into the unit, load the clip list that you want to play, and press the PLAY/PAUSE button.
Clips are played according to the data in the clip list.

Creating and editing clip lists

The following table lists the steps in the creation and editing of clip lists with the scene selection function.
To create a clip list, you always need to carry out the steps inside the heavy lines. Other steps can be carried out as required.

1	**Add sub clips:** Use the Add Sub Clips command to add the clips you want to use to a clip list. You can add up to 300 sub clips to one clip list.This operation can be carried out in the following thumbnail screens. • Clip thumbnail screen • Expand thumbnail screen • Chapter thumbnail screen • Clip list thumbnail screen

2	**Change the sub clip order:** Use the Move Sub Clips command to change the order of sub clips in a clip list. **Delete sub clips:** Use the Delete Sub Clips command to delete specified sub clips from a clip list. **Trim sub clips:** Use the Trim Sub Clip command to adjust the In and Out points of a sub clip. This function can also be used to adjust the overall duration of the clip list. **Set the start timecode:** Use the Set Start Time Code command to set the timecode at the start of a clip list.
3	**Play the clip list:** Use the PLAY/PAUSE button and other playback controls to play the current clip list and check its contents.
4	**Save the clip list:** Use the Save Clip List or Save Clip List as… command to save the newly created clip list to the disc.

To reedit clip lists on the disc

Use the Load Clip List command to load the clip lists you want to edit, and perform the steps **2** to **4** in the previous section.

You can also delete clip lists on the disc.

For details, see "Managing clip lists" (page 130).

Note

Clip lists can be created and edited even when the Write Inhibit tab of the disc is set to recording disabled. However, if you need to save the clip list, set Write Inhibit tab to enable recording before you create or edit the clip list.

To add sub clips

You can add sub clips to clip lists from with the clip thumbnail screen or the clip list thumbnail screen. However, you must use the clip list thumbnail screen to edit clip lists.

Adding sub clips from the clip thumbnail screen

The following procedure explains operations in the clip thumbnail screen. You can proceed in the same way in the expand thumbnail screen and the chapter thumbnail screen. Expanded blocks are added as sub clips in the expand thumbnail screen, and chapters are added as sub clips in the chapter thumbnail screen.

See page 112 for more information about thumbnail screen operations.

1 In the clip thumbnail screen, select the clip that you want to add as a sub clip (multiple selections possible).

2 Display the Thumbnail Menu.

3 Select Add Sub Clips, and then press the SET/S.SEL button or the MENU knob.
The Add Sub Clip screen appears.
The clip(s) selected in step **1** appear in the upper part of this screen, and the clip list appears in the lower Scene Selection window. The I cursor in the Scene Selection window indicates the location where the currently selected sub clip(s) will be inserted.

To display the total duration after addition of the selected clip
Press the SHIFT button.

4 In the Scene Selection window, move the I cursor to the location where you want to insert the clip. (The existing thumbnails arrange themselves to the left and right of the I cursor.)

5 Press the SET/S.SEL button or the MENU knob.
The selected clip is inserted as a subclip and a "+" mark appears on the thumbnail in the Scene Selection window.

To check the addition results
Move the cursor.

6 Press the RESET/RETURN button.
This returns you to the clip thumbnail screen.

7 Repeat steps 1 to 6 as required to add more clips.

8 Save the clip list *(see page 129)***.**

In step **1**, you can hold down the SHIFT button when you press the SET/S.SEL button. This is a shortcut that displays the Add Sub Clip screen

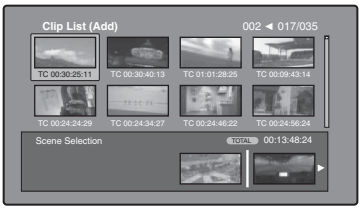
immediately. You can also save the clip list immediately in step **5** by executing the Save Clip List command in the Disc Menu.

Adding sub clips from the clip list thumbnail screen

See page 112 for more information about thumbnail screen operations.

1 **Display the Thumbnail Menu.**

2 **Select Add Sub Clips, and then press the SET/S.SEL button or the MENU knob.**
The Clip List (Add) screen appears.



3 **Select the sub clips that you want to add from the upper part of the screen (the part where 8 thumbnails are displayed, multiple selections possible).**

To select from expanded thumbnails
Press the DISP SEL/EXPAND button to display the expand thumbnail screen.

To select from chapter thumbnails
Press the HOLD/CHAPTER button to display the chapter thumbnail screen.

4 **Press the SET/S.SEL button or the MENU knob.**
The thumbnail selection is confirmed, and an I cursor appears at the bottom of the Clip List (Add) screen (in the Scene Selection window). The I cursor indicates the location where the currently selected sub clips will be inserted.

To display the total duration after addition of the selected clips
Press the SHIFT button.

5 **In the Scene Selection window, move the I cursor to the location where you want to insert the clip. (The existing thumbnails arrange themselves to the left and right of the I cursor.)**

6 **Press the SET/S.SEL button or the MENU knob.**
The sub clips are added at the I cursor position, and you return to the clip list thumbnail screen.
You can check the results of the addition in that screen.

7 **Repeat steps 1 to 6 as required to add more clips.**

8 **Save the clip list** *(see page 129)***.**

In step **1**, you can also perform a shortcut operation by pressing the SET/S.SEL button with the SHIFT button held down.

To reorder sub clips

See page 112 for more information about thumbnail screen operations.

1 **In the clip list thumbnail screen, select the thumbnails of the sub clips that you want to move (multiple selections possible).**

2 **Display the Thumbnail Menu.**

3 **Select Move Sub Clips, and then press the SET/S.SEL button or the MENU knob.**
The Clip List (Move) screen appears.

4 **Move the I cursor to the point where you want to move the selected thumbnails.**

5 **Press the SET/S.SEL button or the MENU knob.**
The sub clips are moved to the I cursor position.

6 **Repeat steps 1 to 5 as required.**

7 Save the clip list *(see page 129)*.

To adjust the In and Out points of sub clips (trim)

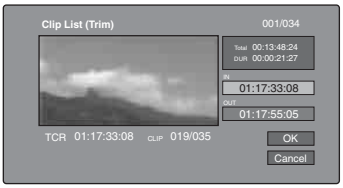
Proceed as follows to define the range of a scene by changing the positions of the In and Out points.

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, select a thumbnail.

2 Display the Thumbnail Menu.

3 Select Trim Sub Clip, and then press the SET/S.SEL button or the MENU knob.
The Clip List (Trim) screen appears.



Like the clip playback screen, this screen allows you to play and search all clips on the disc.

To display a list of In and Out point operations that you can perform
Press the MENU button.

4 When you find the point that you want to make the start point, select "IN" and then press the SET/S.SEL button or the MENU knob.
The timecode of the new In point appears in the timecode display, and the Total (total duration) and DUR (clip duration) displays are updated.

5 When you find the point that you want to make the end point, select "OUT" and then press the SET/S.SEL button or the MENU knob.
The timecode of the new Out point appears in the timecode display, and the Total (total duration) and DUR (clip duration) displays are updated.

To cue up the In point or Out point
Display the Thumbnail Menu, select Cue up Inpoint or Cue up Outpoint, and then press the SET/S.SEL button or the MENU knob.

To cancel the In point or Out point setting
Display the Thumbnail Menu, select Reset Inpoint or Reset Outpoint, and then press the SET/S.SEL button or the MENU knob.
The In point or Out point setting returns to the previous value.

6 Select OK, and then press the SET/S.SEL button or the MENU knob.

7 Repeat steps 1 to 6 as required.

8 Save the clip list *(see page 129)*.

To delete sub clips

See page 112 for more information about thumbnail screen operations.

1 Select the clips to delete in the clip list thumbnail screen (multiple selections possible).

2 Display the Thumbnail Menu.

3 Select Delete Sub Clips, and then press the SET/S.SEL button or the MENU knob.
A message appears asking you to confirm the deletion.

4 Select OK, and then press the SET/S.SEL button or the MENU knob.

5 Repeat steps 1 to 4 as required.

6 Save the clip list *(see page 129)*.

To play the clip list

Note

When this unit is in single clip playback mode *(see page 77)*, only the selected sub clip can be played.

See page 112 for more information about GUI screen operations.

To play using GUI screens

1 In the clip list thumbnail screen, select the thumbnail of the sub clip where you want to start play.

To start play from the start of the clip list
Select the thumbnail of the first sub clip.

2 Press the PLAY/PAUSE button.

To play using the clip list playback screen

1 Display the clip list playback screen.

2 Press the PREV button or the NEXT button to display the sub clip that you want to play.

To start play from the first sub clip
Press the SHIFT + PREV buttons to move to the start of the clip list.

3 Press the PLAY/PAUSE button.

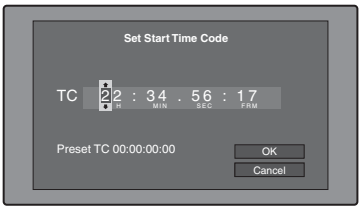
To change the starting timecode of clip lists

The timecode of clip lists is continuous timecode, unrelated to the timecode of the original clips. By default the timecode (LTC) of the start of the clip list is 00:00:00:00, but it can be set to any value.

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, display the Thumbnail Menu.

2 Select Set Start Time Code, and then press the SET/S.SEL button or the MENU knob.
The Set Start Time Code screen appears.



3 Press the left- or right-arrow button to select the digit that you want to change.

4 Turn the MENU knob to change the value of the digit.

5 Repeat steps 3 and 4 as required.

To reset the timecode to 00:00:00:00
Select Reset to Zero in the Thumbnail Menu, and then press the SET/S.SEL button or the MENU knob.

To preset the frequently used timecode
Select Save Preset TC in the Thumbnail Menu, and then press the SET/S.SEL button or the MENU knob.
The timecode set in steps **3** and **4** is saved as a preset value.

To recall the preset timecode
Select Recall Preset TC in the Thumbnail Menu, and then press the SET/S.SEL button or the MENU knob.

6 Press the SET/S.SEL button or the MENU knob.
OK is selected.

7 Press the SET/S.SEL button or the MENU knob again.

8 Save the clip list *(see page 129)***.**

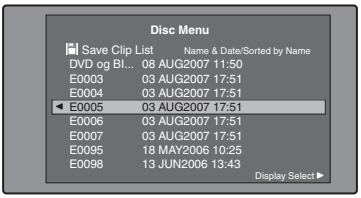
To save clip lists

To save under a specified name

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, display the Disc Menu.

2 Select Save Clip List as..., and then press the SET/S.SEL button or the MENU knob.
A list of clip lists appears.



To switch the information displayed for clip lists
Press the right-arrow button.

With each press, the display changes in the order: “Name & Date” → “Name & Title” → “Name & Short Date” →...

To sort clip lists

Select one of the following orders by selecting Settings > Sort Clip List By... in the Disc Menu.

Name(A-Z): Sort in ascending order by clip list name.

Date(Newest First): Sort by date and time of clip list creation, newest first.

3 Select the desired clip list name, and then press the SET/S.SEL button or the MENU knob.

To save under the same name

The following procedure saves the current clip list under its current name (the name that appears in the clip list thumbnail screen).

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, display the Disc Menu *(see page 111)***.**

2 Select Save Clip List, and then press the SET/S.SEL button or the MENU knob.

The clip list is saved. However, Save Clip List as... is executed when the name displayed in the clip list thumbnail screen is “no name”.

Note

If you press the EJECT button before saving a new or edited clip list, a message appears asking if you want to discard your changes and continue. Follow the instructions in the message to continue or cancel the operation.

Managing clip lists

To load clip lists

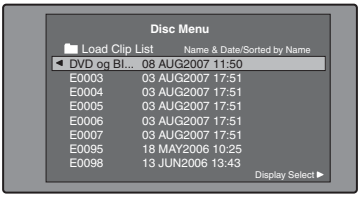
The following procedure loads a clip list stored on the disc into the unit’s internal memory as the current clip list.

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, display the Disc Menu.

2 Select Load Clip List, and then press the SET/S.SEL button or the MENU knob.

A list of clip lists stored on the disc appears.



3 Select the desired clip list, and then press the SET/S.SEL button or the MENU knob.

The name of the clip list selected here appears in the clip list thumbnail screen. When you execute the Save Clip List command in the Disc Menu, the clip list will be saved under that name.

To create a new clip list

Select New File and then press the SET/S.SEL button or the MENU knob.

To clear clip lists

The following procedure clears the current clip list from the unit’s internal memory.

See page 112 for more information about thumbnail screen operations.

1 In the clip list thumbnail screen, display the Disc Menu.

2 Select Clear Clip List, and then press the SET/S.SEL button or the MENU knob.

A message appears asking you to confirm that you want to clear the clip list.

3 Select OK, and then press the SET/S.SEL button or the MENU knob.

The current clip list returns to the unnamed state “(no name)”.

To delete clip lists

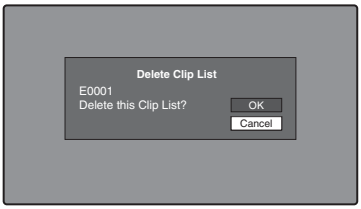
The following procedure deletes a clip list from the disc.

See page 112 for more information about thumbnail screen operations.

1 **In the clip list thumbnail screen, display the Disc Menu.**

2 **Select Delete Clip List, and then press the SET/S.SEL button or the MENU knob.**
A list of clip lists appears.

3 **Select the clip list that you want to delete, and then press the SET/S.SEL button or the MENU knob.**
A message appears asking you to confirm the deletion.



4 **Select OK, and then press the SET/S.SEL button or the MENU knob.**

To sort clip lists

See page 112 for more information about thumbnail screen operations.

1 **In the clip list thumbnail screen, display the Disc Menu.**

2 **Select Settings, and then press the SET/S.SEL button or the MENU knob.**

3 **Select Sort Clip List by..., and then press the SET/S.SEL button or the MENU knob.**

4 **Select one of the following sort methods, and then press the SET/S.SEL button or the MENU knob.**
Name(A-Z): Sort in ascending order by clip list name.
Date(Newest First): Sort by date and time of clip list creation, newest first.
Clip lists will be displayed in the specified order the next time that you carry out an operation such as loading a clip list.

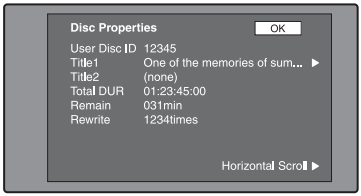
Disc Operations

Checking disc properties

See page 112 for more information about GUI screen operations.

1 **Display the Disc Menu.**

2 **Select Disc Properties, and then press the SET/S.SEL button or the MENU knob.**
The Disc Properties screen appears.



User Disc ID: User disc ID
Title1: Title 1
Title2: Title 2 [1)]
Total DUR: Total recording time
Remain: Remaining recording time
Rewrite: Number of times rewritten

1) Titles can be displayed in European languages when the area of use *(see page 37)* is set to "NTSC AREA" or "PAL AREA".

To scroll hidden parts of the string into view
When a ▶ or ◀ mark is displayed for an item, you can press the left or right arrow button to scroll the display by one character for each press.
The up and down arrow buttons scroll the beginning and end of the string into view.

To return to the previous screen
Press the SET/S.SEL button or the MENU knob.

To edit disc information

You can edit the user disc ID, title 1 [1)], and title 2 by using a software keyboard.

1) Only ASCII characters can be used for the title 1.

See "To edit clip information" (page 120) for information about operations.

Using planning metadata

Planning metadata is a file that contains metadata about the clips to be shot and recorded.
To use planning metadata, you will need to save a file in advance in the specified location of a media, and insert the media into this unit.

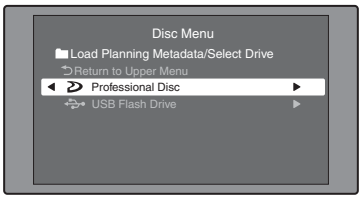
For details, see "To set clip names by using planning metadata" (page 94).

To load planning metadata files

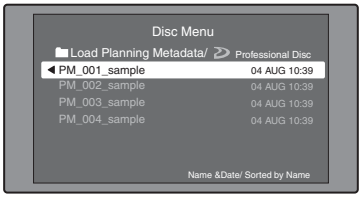
See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select "Load Planning Metadata/Select Drive", and then press the SET/S.SEL button or the MENU knob.
A media selection screen appears.



3 Select the media where your planning metadata file is stored, and then press the SET/S.SEL button or the MENU knob.
A list of the planning metadata files stored on the media appears.



Notes

- If MEMORY REC on the MEMORY REC page of the OPERATION menu is set to ENABL, it is not possible to load planning data from a USB flash drive that is write inhibited. Set MEMORY REC to DSABL before starting, or enable recording on the USB flash drive and connect it again.
- If the message "USB M. INHI" appears when you connect a USB flash drive, disconnect the drive, enable recording on the USB flash drive, and then connect it again.
- Depending on the type of USB flash drive, data may not appear if you attempt to read planning metadata immediately after connecting the USB flash drive. In this case, connect the USB flash drive again, or exit the menu and try again. The data will then appear correctly.

4 Select the desired planning metadata file, and then press the SET/S.SEL button or the MENU knob.
The selected planning metadata file is loaded into the unit's memory, and the Planning Metadata Properties screen appears.

5 Check the information that appears, and press the SET/S.SEL button or the MENU knob.

By connecting this unit and a computer over a network, you can read planning metadata using a web browser. For details, see "To use a web browser to load planning metadata" (page 136).

To sort planning metadata

You can sort planning metadata by operating in the same way as in *"To sort clip lists" (page 131)*. However, in step **3**, select "Sort Planning Metadata by...".
The planning metadata will be displayed in the specified order the next time you load planning metadata.

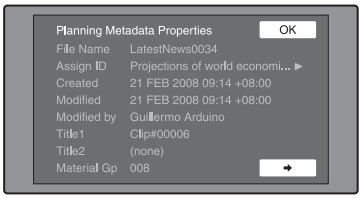
To check planning metadata properties

You can check the properties of the planning metadata that is loaded into this unit's memory, including the date and time of creation and the clip titles.

See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select "Planning Metadata Properties", and then press the SET/S.SEL button or the MENU knob.
The Planning Metadata Properties screen appears.



File Name: Planning metadata file name
Assign ID: Assign ID
Created: Date and time of creation
Modified: Date and time of most recent modification
Modified by: Name of person who modified the file
Title1: Title 1 [1)]
Title2: Title 2
Material Gp: Number of clips recorded with this planning metadata

1) This can be set as the clip name *(see page 94)*.

To scroll hidden parts of the string into view

When a ▶ or ◀ mark is displayed for an item, you can press the left or right arrow button to scroll the display by one character for each press.
The up and down arrow buttons scroll the beginning and end of the string into view.

To return to the previous screen

Press the SET/S.SEL button or the MENU knob.

To change the serial numbers of clip names using planning metadata

You can change the serial numbers that are added to clip names that use planning metadata.

See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select Planning Clip Name Suffix (change the serial number added to clip names created by using planning metadata), and then press the SET/S.SEL button or MENU knob.
The Planning Clip Name Suffix screen appears.

3 Press the left- or right-arrow button to select a digit to change.

4 Press the up- or down-arrow button, or turn the MENU knob to change the digit.

5 Repeat steps 3 and 4 as required.

6 Press the SET/S.SEL button or the MENU knob.
"OK" is selected.

7 Press the SET/S.SEL button or the MENU knob.

To clear planning metadata

See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select "Clear Planning Metadata", and then press the SET/S.SEL button or the MENU knob.
A message appears asking you to confirm that you want to clear the planning metadata.

3 Select "OK", and then press the SET/S.SEL button or the MENU knob.
The planning metadata is cleared from this unit's memory.

To switch the title display in the LCD monitor and viewfinder

When planning metadata is loaded into this unit, you can select the format of the title to display in the LCD monitor and viewfinder.

See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select “Settings”, and then press the SET/S.SEL button or the MENU knob.

3 Select “Planning Clip Name in Clip Info. Area”, and then press the SET/S.SEL button or the MENU knob.

See page 28 for more information about the Clip Info. Area.

4 Select one of the following, and then press the SET/S.SEL button or the MENU knob.

ASCII Clip Name: Display the ASCII format title *(see page 94)*.

Clip Name: Display the UTF-8 format title *(see page 94)*.

To display clip names in the clip information area in the viewfinder

1 Display the Disc Menu.

2 Select “Settings”, and then press the SET/S.SEL button or the MENU knob.

3 Select “Planning Clip Name Display” (whether to display the clip name in the viewfinder screen), and then press the SET/S.SEL button or the MENU knob.

4 Select “Enable”, and then press the SET/S.SEL button or the MENU knob.

Clip information is always shown in the warning indicator area of the LCD monitor if the LCD monitor is set to status display.

Checking user-defined essence marks

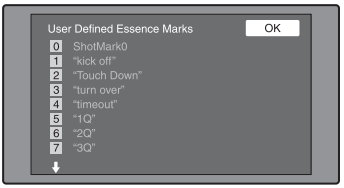
You can display the names of user-defined Shot Mark0 to Shot Mark9 essence marks in planning metadata (UTF-8 format, maximum 32 bytes).

1 Display the Planning Metadata Properties screen *(see page 132)* for the planning metadata loaded into this unit.

The ➡ button is enabled when the planning metadata contains user-defined essence marks *(see page 96)*.

2 Press ➡, and then turn the SET/S.SEL button or the MENU knob.

The User Defined Essence Marks screen appears.



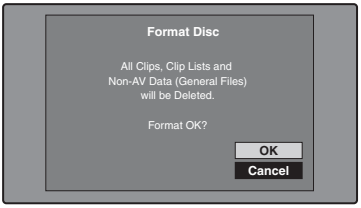
Formatting discs

See page 112 for more information about GUI screen operations.

1 Display the Disc Menu.

2 Select Format Disc, and then press the SET/S.SEL button or the MENU knob.

A message appears asking you to confirm the format.



3 Select OK, and then press the SET/S.SEL button or the MENU knob.

To cancel the format

Select Cancel, and then press the SET/S.SEL button or the MENU knob.

To continue by formatting another disc

Exchange the disc, select OK, and then press the SET/S.SEL button or the MENU knob.

To exit the formatting screen

Press the SET/S.SEL button or the MENU knob with Exit selected.

To disable the Format Disc command

To prevent inadvertent disc formatting, resulting in the loss of recorded data, you can disable the Format Disc command.

See page 112 for more information about GUI screen operations.

1 **Display the Disc Menu.**

2 **Select “Settings”, and then press the SET/S.SEL button or the MENU knob.**

3 **Select “Setting Format Disc”, and then press the SET/S.SEL button or the MENU knob.**

4 **Select “Disable”, and then press the SET/S.SEL button or the MENU knob.**

Displaying disc and clip properties in a web browser

By connecting this unit and a computer over a network, you can display disc properties and clip properties in a web browser installed on the computer (Web Thumbnail function).
The Clip Properties page also allows you to download high-resolution clip data, proxy AV data, and metadata from this unit and to save that data on your computer. The Planning Metadata page allows you to load planning metadata directly into the memory of this unit.

Recommended browsers

The following browsers are recommended.
- Internet Explorer 8 [1)]
- Internet Explorer 9 [1)]

1) This function may not work properly in 32-bit versions of Internet Explorer if you are using a 64-bit version of Microsoft Windows. You should use a 64-bit version of Internet Explorer with 64-bit versions of Windows.

To display the unit’s XDCAM web pages

1 **Connect this unit and a computer to a network** *(see page 232)***.**

2 **Start the browser on the computer, and enter “http://IP_address_of_this_unit/” in the address bar of the browser, and then press the Enter key.**
For example, if the IP address of this unit is “192.168.001.010”, enter “http://192.168.1.10/”.

If the connection succeeds, you will be prompted to enter a user name and a password.

3 **Enter your user name and password, and then press the Enter key.**
The user name and password are set to the following when the unit is shipped from the factory.
- User name: admin
- Password: Model name (“pdw-850”)

After the user name and password are verified, an XDCAM web page appears.

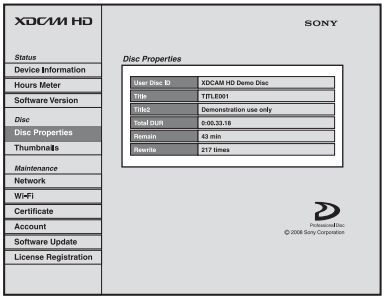
To display disc and clip properties

1 **Insert a disc into this unit, and put this unit into the following state.**
- Recording, playback, search and other disc operations: Stopped
- THUMBNAIL button: Off
- Disc access by Lock or Delete All Clips, Format Disc, and so on in the Disc Menu: Stopped
- Setting of CACHE/INTVAL REC on the REC FUNCTION page of the OPERATION menu: OFF
- FTP connection for file operations: Disconnected, or logged out
- Recording of video from external devices: Disabled
- Connections between this unit and a computer by the Live Logging function: Disconnected
- Setting of LIVE LOGGING on the REC FUNCTION page of the OPERATION menu: Values other than VIEW (OFF or LIVE)
- MENU ON/OFF switch: OFF

2 **Display the XDCAM web pages in the browser of your computer** *(see the previous section)***.**

To display disc properties
Click “Disc Properties” in the Disc menu.
The disc properties of this unit appear in the Disc Properties page.

See “Checking disc properties” (page 131) for more information about the various properties.

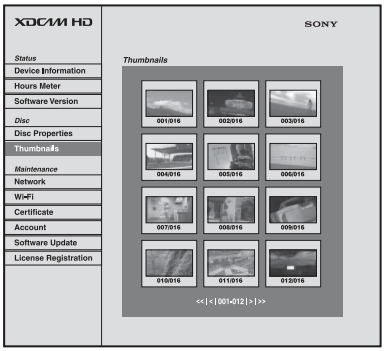


To display clip thumbnails

Click “Thumbnails” in the Disc menu.

A page of thumbnails of clips on the disc appears. Each thumbnail page displays up to 12 thumbnails.

Like the thumbnails in the unit’s GUI screens *(see page 106)*, the thumbnails display several information items, including index picture changed marks, S marks, clip flag icons, and lock icons.



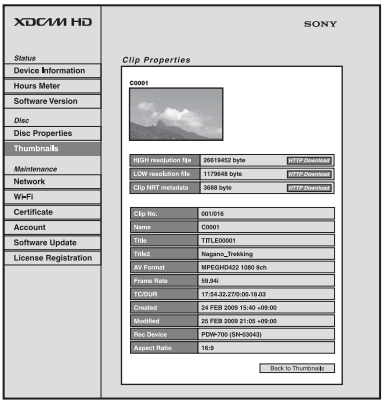
When multiple pages exist, you can switch pages by clicking << (back five pages), < (back one page), > (forward one page), or >> (forward five pages).

To display clip properties

In the Thumbnails page, select a clip by clicking its thumbnail.

The properties of that clip appear in the Clip Properties page.

See “Checking clip properties” (page 119) for more information about the various properties.



To download high-resolution clip data (HIGH resolution file), proxy AV data (LOW resolution file), or metadata (Clip NRT metadata), click “HTTP Download” to the right of the item, click “Save” in the dialog that appears, and specify the save destination.

The specified data is downloaded to the specified location in your computer.

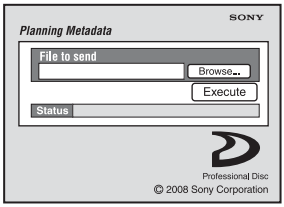
To use a web browser to load planning metadata

1 Insert a disc into this unit, and put this unit into the following state.

- Recording, playback, search and other disc operations: Stopped
- THUMBNAIL button: Off
- Disc access by Lock or Delete All Clips, Format Disc, and so on in the Disc Menu: Stopped
- Setting of CACHE/INTVAL REC on the REC FUNCTION page of the OPERATION menu: OFF
- FTP connection for file operations: Disconnected, or logged out
- Recording of video from external devices: Disabled
- Connections between this unit and a computer by the Live Logging function: Disconnected
- Setting of LIVE LOGGING on the REC FUNCTION page of the OPERATION menu: Values other than VIEW (OFF or LIVE)
- MENU ON/OFF switch: OFF

2 Display the Planning Metadata page of the XDCAM web pages in the web browser of your computer.

To display the Planning Metadata page, proceed in the same way as described in "To display the unit's XDCAM web pages" *(page 135)*. However, in step **2** enter "http://IP_address_of_this_unit/mobile.htm" in the address bar.



3 Click "Browse..." to open the "Choose File" dialog.

4 Select the planning metadata file (XML) you saved on your computer, and then click "Open".

The path of the selected file appears in the "File to send" field.

5 Click "Execute".

The planning metadata is loaded into the unit's memory and stored in the /General/Sony/Planning directory on the disc. "OK" appears in the "Status" field when the transfer is complete.

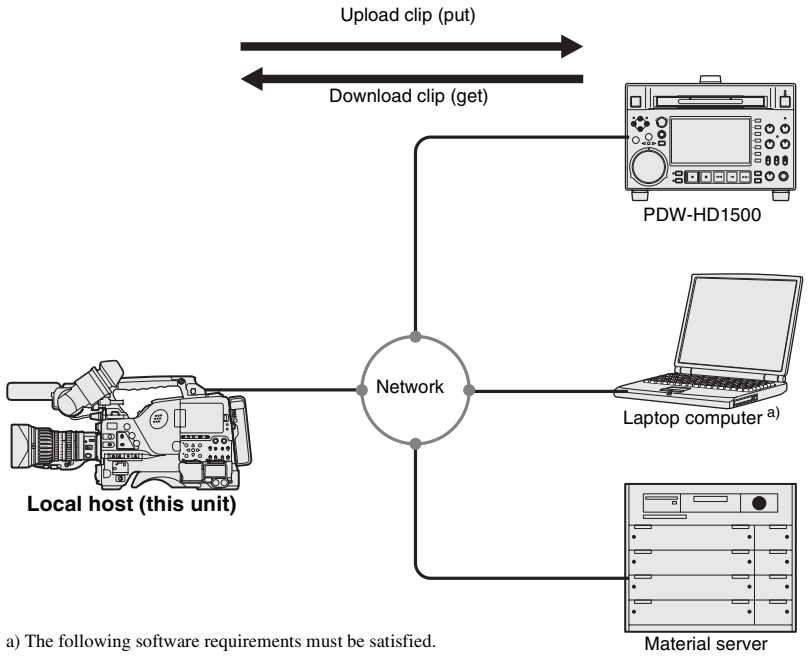
Transferring Clips (Direct FTP function)

You can transfer clips (MXF files) between this unit and external devices over a network. This unit has an Direct FTP function, which allows you to connect to any XDCAM device or computer with an FTP server function and transfer files with a few simple operations in the GUI screen.
The following table lists the types of file transfers that this unit can execute.

Transfer direction	Transfer target	Function
Upload	One or more clips	put
	Multiple clips with clip list	
	Part of one clip	partial put
Download	One clip	get

Note

File transfers with this function are limited to clips (high-resolution data) and clip list files. To transfer files of other types (proxy AV data, files in the General and User Data directories, and so on), operate after establishing an FTP connection *(see page 227)*.



a) The following software requirements must be satisfied.
- An FTP server function must be available.
- In the case of Windows, Microsoft Window IIS (Internet Information Service) Version 7.0 or higher.
- In the case of Macintosh, Mac OS X Version 10.5.6 or higher.

Preparations for clip transfers

Check the following points.

- This unit and the target transfer device (XDCAM device or computer) must be supplied with stable power and must be connected to a network.
- The settings under the NETWORK 1 page of the MAINTENANCE menu must be set to values that allow network connections.
- The ETHERNET/USB item on the POWER SAVE page of the OPERATION menu must be set to ENABL.
- For XDCAM devices that support UPnP (universal plug and play), the UPnP function must be enabled (the setting may vary).

To enable the UPnP function

The UPnP (universal plug and play) function allows devices to be easily connected to networks. The following XDCAM devices support UPnP.

- PDW-F1600
- PDW-HD1500
- PDW-HR1
- PDW-F800
- PDW-700
- PDW-740

To enable the UPnP function on this unit, set UPnP on the NETWORK SETTING page of the MAINTENANCE menu to ENABLE, and then power the unit off and on again.

For the settings on other XDCAM devices, refer to the operation manuals supplied with the devices.

Uploading clips

To upload entire clips

Proceed as follows to upload selected clips or all clips and clip lists on the disc.

See page 112 for more information about thumbnail screen operations.

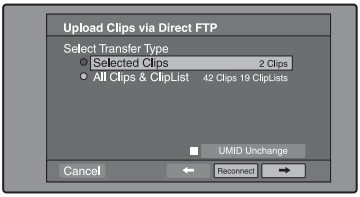
1 In the clip thumbnail screen, select the clip to upload (multiple selections possible).

To upload all clips and clip lists on the disc, start from step **2**.

2 Display the Thumbnail Menu.

3 Select Upload Clips via Direct FTP, and then press the SET/S.SEL button or the MENU knob.

The Select Transfer Type screen of the Upload Clips via Direct FTP command appears.



4 Select the type of clip transfer.

Selected Clips: Clips selected in step **1**.

All Clips & ClipList: All clips and clip lists on the disc.

To transfer while preserving the UMID of the transfer source clips

Check the “UMID Unchange” option.

Note

If the remote host is a computer, clips are transferred with the UMID unchanged regardless of this setting.

To reconnect to a remote host

The Reconnect button is enabled if the most recent operation successfully established a connection to a remote host.

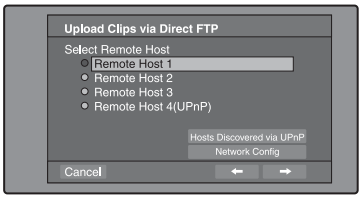
You can select “Reconnect” and press the SET/S.SEL button or MENU knob to reconnect to that host. The host is selected automatically and the screen changes directly to the Connecting Status screen *(see step **9** in the procedure)*.

Note

The Reconnect button is not enabled if the most recent operation failed to connect to a remote host.

5 Select ➡, and then press the SET/S.SEL button or the MENU knob.

The Select Remote Host screen appears.



6 Select the remote host (the target device to which you want to transfer the clips).

You can register up to four remote hosts.

Remote Host 1 to 3: Register these in the settings screen.

Remote Host 4(UPnP): A remote host that supports UPnP (universal plug and play) is detected and registered automatically *(see "To enable the UPnP function" (page 139))*.

To check remote hosts discovered by the UPnP function

Select "Hosts Discovered via UPnP", and then press the SET/S.SEL button or the MENU knob. (If the UPnP function of this unit is disabled, a confirmation screen appears prompting you to enable it. Select "OK" and then press the SET/S.SEL button or the MENU knob. The UPnP function will be enabled when you power the unit off and then on again.)

The Select Host Discovered via UPnP screen appears. (Some time may be required before the search for remote hosts finishes.)

Select the name of a remote host from the list, and press the SET/S.SEL button or the MENU knob. A network settings screen appears *(see step* **7***)*. If you establish a connection with the selected remote host, the network settings are saved in Remote Host 4. From the next time that you select "Remote Host 4(UPnP)", the remote host that you select here will be connected.

To check the network settings of this unit

Select "Network Config", and then press the SET/S.SEL button or the MENU knob. The following network settings appear.

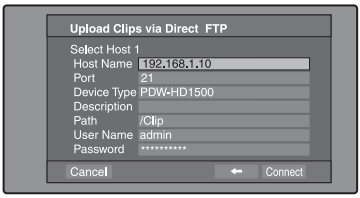
Item	Setting
Host Name	Host name
IP Address	IP address [a)]
Subnet Mask	Subnet mask
DHCP	Setting that specifies whether to acquire the IP address automatically from a DHCP server **Enabled:** Acquire automatically **Disabled:** Do not acquire automatically
Address Status	Method used to set IP address **Manual Set:** Manually **DHCP:** DHCP function **AutoIP:** Auto IP addressing function **Undefined:** Nothing specified
Default Gateway	Default gateway

a) An IP address determined by a DHCP server appears instantly in this field.

Select OK and press the SET/S.SEL button or the MENU knob to return to the previous screen.

7 Select ➡, and then press the SET/S.SEL button or the MENU knob.

A network settings screen for the remote host appears.



Item	Setting
Host Name	Host name or IP address. (If this is a host name, a DNS server must be available on the connected network. Specification of an IP address is recommended.)
Port	Port used by the FTP server (normally "21").

Item	Setting
Device Type	The type of the remote host • If the remote host is an XDCAM device, select the model name or “Other XDCAM model” (if the model name is not in the list) from the list of model names. a) • If the remote host is a computer, select “Others(PC Server)” from the list of model names.
Description	Comment about the remote host. (UTF-8 encoding, up to 127 bytes. This setting has no effect on the connection.) The setting that you make here appears as the remote host name in the Select Remote Host screen *(see step **5** of the procedure)*.
Path	If the remote host is a computer, path to the transfer destination directory. (This is not needed if the remote host is an XDCAM device.)
User Name	User name for FTP login. (If the remote host is an XDCAM device, the default is “admin”.)
Password	Password for FTP login. (If the remote host is an XDCAM device, the default is the model name, such as “pdw-850”.)

a) If an XDCAM device is selected as the Device Type, then the User Name and Password are set automatically to the default, and you do not need to make the Port and Path settings. Simply selecting the Host Name (or as appropriate the Description) is enough to fulfill the requirements for connection.

If the User Name or Password of the device that you want to connect to changes, set them here.

8 Set the various items.

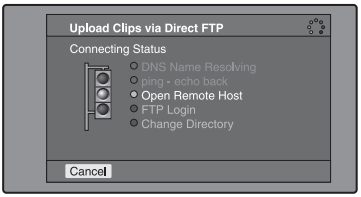
To select an item

Turn the MENU knob to move the cursor, and then push the SET/S.SEL button or the MENU knob.

A software keyboard appears so that you can enter a setting.

9 Select “Connect”, and then press the SET/S.SEL button or the MENU knob.

The settings are saved and the Connecting Status screen appears.



The following table lists the various stages that appear in the connection status screen and describes the corresponding processing.

Item	Description
DNS Name Resolving	When host was specified by a host name instead of an IP address, the unit is querying a DNS server for the host’s IP address.
ping - echo back	The unit has issued a ping (communications established) command and is waiting for a response.
Open Remote Host	The unit is connecting to the remote host over the specified port.
FTP Login	The unit is logging in to the remote host with specified user name and password.
Change Directory	When a path was specified, the unit is changing to the specified directory.

The status indicated beside each item lights in yellow during processing for that item, and lights in green when the processing finishes.

If an error occurs

The status indicator changes to red.
Correct the condition that caused the error and repeat the operation.

If you cannot connect

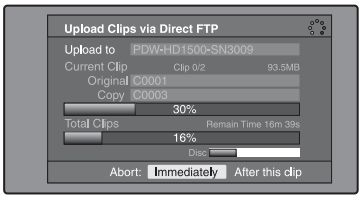
Check the following points.

- Make sure that this unit and the remote host are correctly connected to the network.
- If the remote host is an XDCAM device, make sure that it is not displaying a GUI screen.
- If the remote host is an XDCAM device, make sure that a disc is inserted.

When the connection is complete (the indicators of all items have turned green), the Upload Clips via Direct FTP screen appears.

To check the connection on the remote host side

If the remote host is an XDCAM device, check that the "NETWORK!" has appeared in the display or other status display location.



The progress bars show the progress of the transfer. If multiple clips are being transferred, a count of the clips that have been successfully transferred appears.
If the remote host is an XDCAM device, the disc usage also appears. (It does not appear if the remote host is a computer).

If a file of the same name already exists at the transfer destination

The file name is changed so that it does not conflict with the file at the destination.
The name of the file on the transfer source (this unit) appears in the "Original" field, and the name of the file on the transfer destination appears in the "Copy" field. 1)

1) If the clip name is a standard name, it is changed to the unused clip name with the smallest number. (Example: If names C0001 to C0020 are in use, the name "C0021".)
If the clip name is a user-defined name, a serial number is appended to the clip name. (Example: If the name is "EveningNews", "EveningNews(1)".)

To cancel the processing

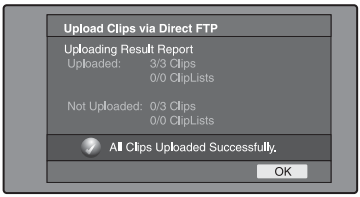
Do one of the following.

- Select "Abort: Immediately", and then press the SET/S.SEL button or the MENU knob.
- If you are transferring multiple clips, select "Abort: After this clip", and then press the SET/S.SEL button or the MENU knob. (The transfer of subsequent clips will be cancelled after transfer of the current clip finishes.)
- Set the ETHERNET/USB item on the POWER SAVE page of the OPERATION menu to DSABL.

Note

When several files are to be transferred, the entire transfer task is cancelled when the first transfer failure occurs. Subsequent clips are not transferred.

When the transfer of all files has finished, the Uploading Result Report screen appears. Select "OK", and then press the SET/S.SEL button or the MENU knob. This returns you to the clip thumbnail screen.



To upload part of a clip

You can select part of a clip in the expand thumbnail screen or the chapter thumbnail screen and upload that part.

Expand thumbnail screen: The clip is divided arbitrarily into parts of equal length, regardless of content. Use this method if you do not need to specify the transfer range precisely.

Chapter thumbnail screen: Use this method if you want to transfer a specific range. (By setting essence marks at the start point and end point of the transfer range, you can specify the range with a precision of one frame.)

1 In the clip thumbnail screen, select a clip and press the EXPAND or CHAPTER button.

The expand thumbnail screen or the chapter thumbnail screen appears.

2 Select the transfer range.

To select multiple thumbnails

While holding the SHIFT key down, turn the MENU knob, or press the ←/IN or →/OUT button.

The duration of the transfer range appears in the lower right of the screen.

Note

When the selected range (duration) in the expand thumbnail screen is less than two seconds, it is expanded automatically to two seconds.

3 Execute step 2 to 9 of the previous section “To upload entire clips”.

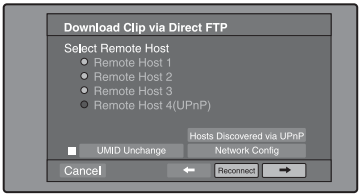
Downloading clips

Proceed as follows to download clips from a remote host (such as other XDCAM device devices or a material server).

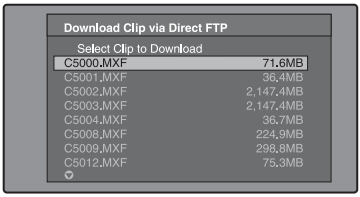
See page 112 for information about thumbnail screen operations.

1 Display the Disc Menu.

2 Select Download Clip via Direct FTP, and then press the SET/S.SEL button or the MENU knob.
The Select Remote Host screen of the Download Clip via Direct FTP command appears.



3 Execute steps 6 to 9 of “To upload entire clips” (page 139).
If the connection succeeds, the Select Clip to Download screen appears.



Notes

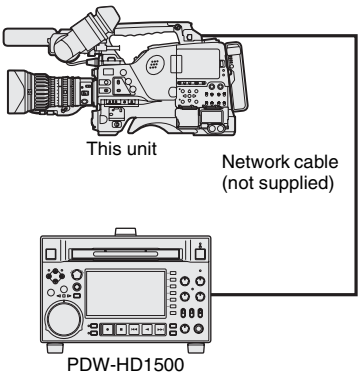
- If the remote host is a computer, only the MXF files in the specified directory appear.
- When more 301 or more clips are stored on a remote host, the denominator indicating the clip total at the upper right is shown as “- - -”, and the names of the 301st and following clips are not displayed.
- File names containing other than ASCII characters (kanji and so on) are not displayed.

4 Select a clip to download, and then press the SET/S.SEL button or the MENU knob.
The download starts.
When the download finishes, the Downloading Result Report screen appears. Select “OK”, and then press the SET/S.SEL button or the MENU knob. This returns you to the clip thumbnail screen.

Copying clips directly between XDCAM devices

In the field or another environment where the devices are not connected to a network, you can copy (upload) clips between XDCAM devices by connecting them directly. The example in the following procedure shows how to copy a clip from this unit to a PDW-HD1500. Insert discs into both units and proceed as follows.

1 Connect this unit and the PDW-HD1500 by a network cable.
The cable can be either a cross cable or a straight cable.



2 Set up the two units as follows.

Settings on this unit

Item		Setting
POWER SAVE page of OPERATION menu	ETHERNET/USB	ENABLE
NETWORK SETTING page of MAINTENANCE menu	DHCP	ENABLE
	UPnP	ENABLE

Settings on the PDW-HD1500

Item	Setting
Item M50 in the MAINTENANCE menu: DHCP	ENABLE
Item M59 in the MAINTENANCE menu: UPnP	ENABLE

3 Power both units off and on again, and wait for about three minutes.

4 Check that the IP addresses of the two units have been set as follows by the Auto-IP function.

IP address of this unit

Item		Setting
NETWORK SETTING page of MAINTENANCE menu	IP ADDRESS	169.254.XXX.XXX (X: any number)

IP address of the PDW-HD1500

Item	Setting
Item M51 in the MAINTENANCE menu: IP ADDRESS PRESET	169.254.XXX.XXX (X: any number)

5 In the clip list thumbnail screen of this unit, select the clip to copy (upload).

6 Display the Thumbnail Menu.

7 Select Upload Clips via Direct FTP, and then press the SET/S.SEL button or the MENU knob.
With ➡ selected, the Select Transfer Type screen of the Upload Clips via Direct FTP command appears.

8 Press the SET/S.SEL button or the MENU knob.
The Select Remote Host screen appears.

9 Select "Hosts Discovered via UPnP", and then press the SET/S.SEL button or the MENU knob.
The detected connection destination device (the PDW-HD1500) appears in the Select Host Discovered via UPnP screen.

10 Press the SET/S.SEL button or the MENU knob.
Detailed information about the connection destination device (the PDW-HD1500) appears.

11 With "Connect" selected, press the SET/S.SEL button or the MENU knob.
Transfer of the clip begins as soon as the connection is established.
During transfer of the clip, "NETWORK!" appears in the display of the connection destination device (the PDW-HD1500).

When transfer of the clip completes, an Uploading Result Report appears on the screen.
Press the SET/S.SEL button or the MENU knob to return to the clip thumbnail screen.

12 Check the copied clip in the clip thumbnail screen of the connection destination device (the PDW-HD1500).

Shortcut List

You can access many functions from the keyboard, without displaying a menu (shortcut operations).
Shortcuts are available for the following functions. The plus sign (+) indicates that one button is held down while another is pressed, for example “SHIFT + RESET/RETURN”.

Note

The same shortcut may access different functions, depending on the screen that is active when it is executed.

Function	Operation
Clip List Thumbnail (display clip list thumbnail screen)	SUB CLIP/DISC MENU
Expand Thumbnail (display expand thumbnail screen)	DISP SEL/EXPAND
Chapter Thumbnail (display chapter thumbnail screen)	HOLD/CHAPTER
Essence Mark Thumbnail (display essence mark thumbnail screen)	SHIFT + THUMBNAIL/ESSENCE MARK
Add Sub Clip (add sub clip)	SHIFT + SET/S.SEL
Delete Clip (delete clip)	SHIFT + RESET/RETURN
Lock/Unlock Clip (lock or unlock clip)	SHIFT + STOP
Set Inpoint (set In point)	Left-arrow + SET/S.SEL
Set Outpoint (set Out point)	Right-arrow + SET/S.SEL
Cue up Inpoint (cue up In point)	Left-arrow + PREV or left-arrow + NEXT
Cue up Outpoint (cue up Out point)	Right-arrow + PREV or right-arrow + NEXT
Reset Inpoint (reset In point)	Left-arrow + RESET/RETURN
Reset Outpoint (reset Out point)	Right-arrow + RESET/RETURN
Cue up (cue up)	SET/S.SEL [a)]
Cue up & Play (cue up and play)	PLAY/PAUSE [b)]
Page Down (switch to next page)	SHIFT + down-arrow or F FWD
Page Up (switch to previous page)	SHIFT + up-arrow or F REV
Go To End (go to the last item)	SHIFT + NEXT
Go To Top (go to the first item)	SHIFT + PREV
Select Multi Clip (select multiple clips)	SHIFT + right-arrow or SHIFT + left-arrow
Exit (exit the current thumbnail screen)	THUMBNAIL/ESSENCE MARK

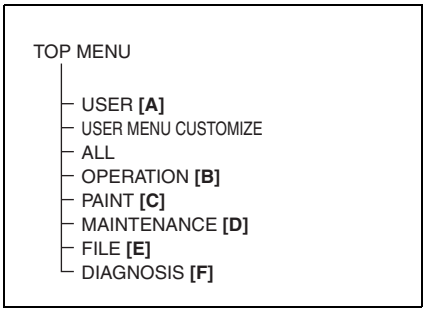
a) If Settings >SET Key on Thumbnail in the Disc Menu is set to “Cue up & Play”, then play starts as soon as cueup is ready.

b) If Settings >SET Key on Thumbnail in the Disc Menu is set to “Cue up & Play”, then pressing the SET/S.SEL button has the same effect.

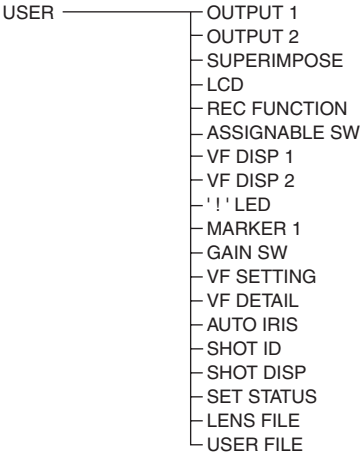
Chapter 6 Menu Displays and Detailed Settings

Menu Organization

The following chart shows the organization of menus in this camcorder.

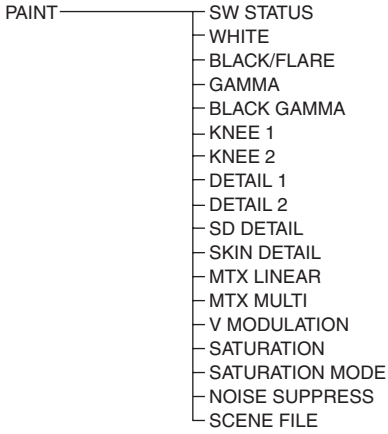


[A] USER menu

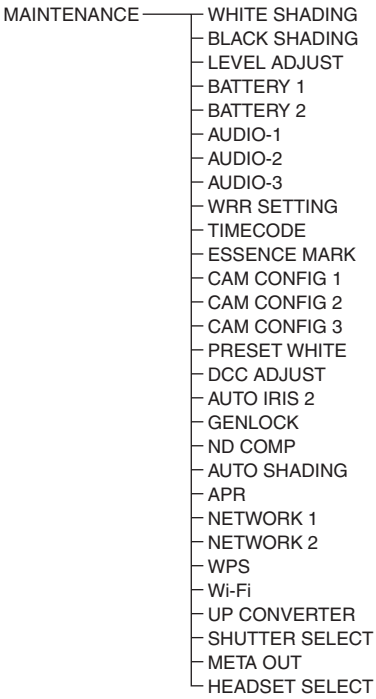


[B] OPERATION menu

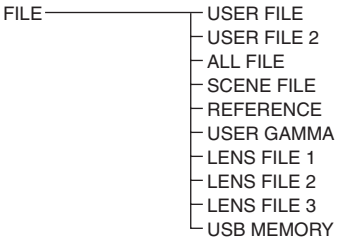
[C] PAINT menu



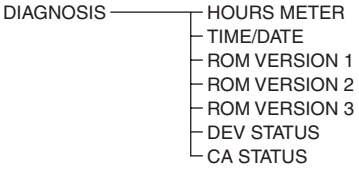
[D] MAINTENANCE menu



[E] FILE menu

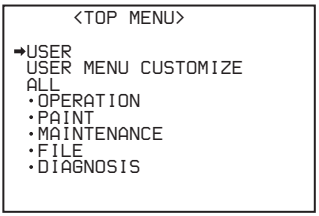


[F] DIAGNOSIS menu



TOP menu and top-level menus

The TOP menu appears when, with no menu displayed, you hold down the MENU knob and set the MENU ON/OFF switch to ON. The TOP menu contains only top-level menus.



When you select a top-level menu, the most recently shown page of that menu appears. The CONTENTS page appears when the menu is selected for the first time.

For details about how to use menus, see page 192.

USER menu

This menu allows you to add any desired page from the OPERATION, PAINT, MAINTENANCE, FILE, and DIAGNOSIS menus to suit your needs. By gathering frequently used pages on the USER menu beforehand, you can call up them quickly whenever you need them.

This menu is normally displayed when the MENU ON/OFF switch is set to ON.

USER MENU CUSTOMIZE menu

This menu allows you to add pages to or delete pages from the USER menu to suit your needs.

ALL menu

This menu allows you to handle all items in the OPERATION, PAINT, MAINTENANCE, FILE, and DIAGNOSIS menus as if they were in one menu.

OPERATION menu

This menu contains items for changing settings according to conditions related to the subject when the camcorder is being operated.

PAINT menu

This menu contains items for making detailed image adjustments while using a waveform monitor to monitor the waveforms output by the camera. Support of a video engineer is usually required to use this menu. Although you can also use an external remote control unit to set the items on this menu, this menu is effective when using the camcorder by itself outdoors.

MAINTENANCE menu

This menu contains items for making settings for audio, timecode, essence marks, and battery.

FILE menu

This menu is for saving the adjusted data in the camcorder memory or on a USB flash drive. The following files can be saved.

User files

User files save the setting items and setting data of customized USER menus. You can save up to 100 user files on a USB flash drive. Once you save a user file on a USB flash drive, you can easily set the USER menu to your preference by loading the file.

For details on user files, see "Saving and Recalling User Files" (page 219).

ALL files

ALL files saves the setting data of all of the menus. You can save up to 100 ALL files on a USB flash drive.

Once a camcorder is set up according to your preferences and you save an ALL file on a USB flash drive, you can easily set other camcorders to those settings by loading the data from the USB flash drive.

Note

Device specific data (output levels and shading that requires adjustment for the specific device) is not saved.

Scene files

In the scene file, the setting values of PAINT menu items set to shoot a particular scene are saved. You can save up to five scene files in the camcorder memory and up to 100 scene files on a USB flash drive. For example, first adjust the settings to shoot a rehearsal of a particular scene and then save them as a scene file. Then load that file before the actual shooting so that you can quickly recreate setup conditions of the rehearsal.

Reference files

Reference files save the reference values that are set when STANDARD is executed in the SCENE FILE page of the PAINT menu. You can save one reference file in the internal memory of the unit and one on a USB flash drive.

Lens files

Lens files save the setting data used to compensate for the characteristics of lenses, such as flare, white shading, and auto iris gain. You can save up to 32 lens files in the internal memory of the unit and up to 100 lens files on a USB flash drive.

DIAGNOSIS menu

This menu shows the digital hours meter, the ROM version, and information about the internal device status of the camcorder.

Menu List

Tips

- The bold-faced numbers designate the pages that have been registered in the USER menu at the factory.
- The bold-faced settings are the factory default settings.
- The initial value of items with a setting range of –99 to 99 is 0.
- When the setup value in the Settings column is surrounded by parentheses ( ), the value is a relative value. The setting range shown on the menu screen may differ from what is shown in the manual.

OPERATION menu

No.	Page	Item	Settings	Description
01	OUTPUT 1	SDI OUT 1 SELECT	**OFF**/HDSDI/SDSDI	Selects the output signal from the SDI OUT 1 connector.
		SDI OUT 2 SELECT	**OFF**/HDSDI/SDSDI/VF	Selects the output signal from the SDI OUT 2 connector.
		SDI OUT 2 SUPER	**OFF**/ON	Sets the superimposed information output from the SDI OUT 2 connector. **Note** Text information is always displayed, regardless of this setting, when SDI OUT 2 SELECT is set to VF.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the output signal from the TEST OUT connector. **Note** When R, G, or B is selected, turning the power of the unit off and on changes the setting to Y.
		TEST OUT SUPER	**OFF**/ON	Sets the superimposed information output from the TEST OUT connector. **Note** Regardless of this setting, text data is output from this connector when the setting of TEST OUT SELECT is Y, R, G, or B. During the display of text data, you can hide the text data by switching this item from ON to OFF. (It is also hidden in the viewfinder.)

No.	Page	Item	Settings	Description
02	OUTPUT 2	DOWN CON MODE (Does not appear when the FORMAT page item SYSTEM LINE is set to 1080 and the SYSTEM FREQUENCY item is set to 23.9P)	**CROP**/SQEZE	Sets the conversion mode for down-converted output.
		WIDE ID	**THROU**/AUTO	Specifies whether to add wide picture information to the SD output signal. **THROU:** Output the video signals without adding wide picture information. **AUTO:** When the DOWN CON MODE item is set to SQEZE, add wide picture information to the output video signals.
03	SUPER IMPOSE	SUPER(VFDISP)	OFF/**ON**	When the SDI OUT 2 SUPER item or the TEST OUT SUPER item on the OUTPUT 1 page is set to ON, turn the output of text (superimposed) information from the SDI OUT 2 or TEST OUT connector on or off for each item.
		SUPER(MENU)	OFF/**ON**	
		SUPER(TC)	**OFF**/ON	
		SUPER(MARKER)	**OFF**/ON	Turns the marker display on or off in the output from the following connectors. • SDI OUT 2 connector (when SDI OUT 2 SELECT on the OUTPUT 1 page is set to HDSDI/SDSDI, and SDI OUT 2 SUPER is set to ON) • TEST OUT connector (when TEST OUT SUPER on the OUTPUT 1 page is set to ON)
		SUPER(ZEBRA)	**OFF**/ON	Turns the output zebra display from the following connectors on or off. • SDI OUT 2 connector (when SDI OUT 2 SELECT is set to HDSDI or SDSDI, and SDI OUT 2 SUPER is set to ON on the OUTPUT 1 page) • TEST OUT connector (when TEST OUT SUPER is set to ON on the OUTPUT 1 page)
04	LCD	LCD COLOR	(–99 to 99)	Adjusts the LCD color.
		LCD MARKER&ZEBRA	OFF/**ON**	Turns the marker and zebra display in the LCD monitor on or off.

No.	Page	Item	Settings	Description
05	REC FUNCTION	SLOW & QUICK	**OFF**/ON	*For details, see "Shooting with Slow & Quick Motion" (page 86).*
		FRAME RATE	1080/23.98P: 1 to 48 1080/25P: 1 to 50 1080/29.97P: 1 to 60	
		CACHE/INTVAL REC	**OFF**/CACHE/A. INT/M. INT	*For details, see "Starting a shoot with a few seconds of pre-stored picture data (Picture Cache function)" (page 81) and "Time-lapse video (Interval Rec function)" (page 82).*
		CACHE REC TIME	**0-2S**/2-4S/4-6S/6-8S/8-10S/18-20S/28-30S	
		TAKE TOTAL TIME	**5MIN**/10MIN/15MIN/20MIN/30MIN/40MIN/50MIN/1H/2H/3H/4H/5H/7H/10H/15H/20H/30H/40H/50H/70H/100H	
		REC TIME	**5SEC**/10SEC/15SEC/20SEC/30SEC/40SEC/50SEC/1MIN to 85MIN	
		PRE-LIGHTING	**OFF**/2SEC/5SEC/10SEC	
		NUMBER OF FRAME	When SYSTEM LINE is set to 720 and REC FORMAT is set to HD422 50, HD420 HQ, or HD420 SP: **2**/6/12 When either SYSTEM LINE or REC FORMAT is set to another setting: **1**/3/6	
		TRIGGER INTERVAL	**M**/1SEC to 10SEC/15SEC/20SEC/30SEC/40SEC/50SEC/1MIN to 10MIN/15MIN/20MIN/30MIN/40MIN/50MIN/1H/2H/3H/4H/6H/12H/24H	
		DISC EXCHG CACHE	**OFF**/ON	*For details, see "Exchanging discs while recording (Disc Exchange Cache function)" (page 87).*
		CLIP CONT REC	**OFF**/ON	*For details, see "Recording with the Clip Continuous Rec function" (page 88).*
		LIVE LOGGING	**OFF**/LIVE/VIEW	*For details, see "Using the Live Logging function" (page 97).*

No.	Page	Item	Settings	Description
06	ASSIGNABLE SW	ASSIGN SW <1>		*For details, see "Assigning functions to ASSIGN switches" (page 208).*
		ASSIGN SW <2>		
		ASSIGN SW <3>		
		ASSIGN SW <4>		
		ASSIGN SW <5>		
		ASSIGN SW <RET>		
		ZOOM SPEED	0 to **20** to 99	
		RETURN VIDEO	**OFF**/ON	
07	POWER SAVE	ETHERNET/USB	**DSABL**/ENABL	*For details, see "Setting power saving functions" (page 211).*
		REC AUDIO OUT	**EE**/SAVE	
		TEST OUT SAVE	OFF/**ON**	
		Wi-Fi	**DSABL**/ENABL	
08	VF DISP 1	VF DISP	OFF/**ON**	*For details, see "Selecting the display items" (page 200).*
		VF DISP MODE	1/2/**3**	
		DISP EXTENDER	OFF/**ON**	
		DISP FILTER	OFF/**ON**	
		DISP WHITE	OFF/**ON**	
		DISP GAIN	OFF/**ON**	
		DISP SHUTTER	OFF/**ON**	
		DISP AUDIO	OFF/**ON**	
		DISP DISC	OFF/**ON**	
		DISP IRIS	OFF/**ON**	
09	VF DISP 2	DISP ZOOM	OFF/**ON**	
		DISP COLOR TEMP	**OFF**/ON	
		DISP BATT REMAIN	**INT**/VOLT/AUTO	
		DISP DC IN	**OFF**/ON	
		DISP 16:9/4:3 ID	**OFF**/ON	
		DISP WRR RF LVL	**OFF**/ON	
		DISP REC FORMAT	**OFF**/ON	
		DISP CLIP NO(PB)	OFF/**ON**	
		DISP TIMECODE	**OFF**/ON	
		DISP ALAC	**OFF**/ON	
10	VF DISP 3	DISP CLIP NAME	**PLAN**/AUTO	
		DISP SCENE FILE	**OFF**/ON	
		DISP CONT REC	OFF/**ON**	
		LOW LIGHT	**OFF**/ON	
		LOW LIGHT LEVEL	(–99 to 99)	
		VF BATT WARNING	**10%**/20%	
		ABSOLUTE VALUE	**OFF**/ON	

No.	Page	Item	Settings	Description
11	VF DISP 4	DISP GPS	**OFF**/ON	*For details, see "Selecting the display items" (page 200).*
		WIRELESS STATUS	OFF/**ON**	
		EXT MEDIA REMAIN	OFF/**ON**	
		SENDING CLIPINFO	OFF/**ON**	
		NW CLIENT MODE	OFF/**ON**	
		STREAMING STATUS	OFF/**ON**	
12	'!' LED	GAIN <!>	OFF/**ON**	
		SHUTTER <!>	OFF/**ON**	
		WHITE PRESET <!>	OFF/**ON**	
		CC 5600K <!>	OFF/**5600K**	
		ATW RUN <!>	OFF/**ON**	
		EXTENDER <!>	OFF/**ON**	
		FILTER ND <!>	**OFF**/ON	
		FILTER CC <!>	**OFF**/ON	
		OVERRIDE <!>	OFF/**ON**	
13	'!' LED STD	GAIN <!>	**0dB**/LOW/MID/HIGH	*The setting of SHUTTER <!> varies depending on the resolution and system frequency. See page 58 for information about the settings.*
		SHUTTER <!>	**OFF**/ECS/ 1/100 / 1/125 / 1/250 / 1/500 / 1/1000 / 1/2000 /SLS	
		WHITE BAL <!>	P/A/B/PA/PB/**AB**	
		CC 5600K <!>	**OFF**/ON	
		ATW RUN <!>	**OFF**/ON	
		EXTENDER <!>	**OFF**/ON	
		FILTER ND <!>	**1**/2/3/4	
		FILTER CC <!>	A/**B**/C/D	
		OVERRIDE <!>	**OFF**/ON	
14	MARKER 1	MARKER	OFF/**ON**	*For details, see "Setting the marker display" (page 202).*
		CENTER	**OFF**/ON	
		CENTER MARK	1/2/**3**/4	
		SAFTY ZONE	**OFF**/ON	
		SAFTY AREA	80%/**90%**/92.5%/95%	
		ASPECT	**OFF**/ON	
		ASPECT SELECT	15:9/14:9/13:9/**4:3**/1.85/ 2.35	
		ASPECT MASK	OFF/**ON**	
		ASPECT MASK LVL	0 to **12** to 15	
		100% MARKER	**OFF**/ON	

No.	Page	Item	Settings	Description
15	MARKER 2	USER BOX	**OFF**/ON	*For details, see* "Setting the marker display" (page 202).
		USER BOX WIDTH	3 to **240** to 479	
		USER BOX HEIGHT	3 to **135** to 269	
		USER BOX H POS	–240 to **0** to 239	
		USER BOX V POS	–135 to **0** to 134	
		CENTER H POS	–480 to **0** to 479	
		CENTER V POS	–270 to **0** to 269	
		ASPECT SAFE ZONE	**OFF**/ON	
		ASPECT SAFE AREA	80%/**90%**/92.5%/95%	
16	FOCUS ASSIST	FOCUS ASSIST IND	**OFF**/ON	*For details, see "Using the Focus Assist function" (page 79).*
		FOCUS IND POS	**BOTTM**/LEFT/TOP/ RIGHT	
		FOCUS AREA MARK	**OFF**/ON	
17	GAIN SW	GAIN LOW	–6dB/–3dB/**0dB**/3dB/ 6dB/9dB/12dB/18dB/ 24dB/30dB/36dB/42dB	*For details, see "Setting gain values for the GAIN selector positions" (page 207).*
		GAIN MID	–6dB/–3dB/0dB/3dB/ **6dB**/9dB/12dB/18dB/ 24dB/30dB/36dB/42dB	
		GAIN HIGH	–6dB/–3dB/0dB/3dB/ 6dB/9dB/**12dB**/18dB/ 24dB/30dB/36dB/42dB	
		GAIN TURBO	–6dB/–3dB/0dB/3dB/ 6dB/9dB/12dB/18dB/ 24dB/30dB/36dB/**42dB**	
		TURBO SW IND	**OFF**/ON	
		SHOCKLESS GAIN	**OFF**/ON	
18	VF SETTING	ZEBRA	**OFF**/ON	*For details, see "Setting the viewfinder" (page 203).*
		ZEBRA SELECT	**1**/2/BOTH	
		ZEBRA1 DET LVL	20% to **70%** to 107%	
		ZEBRA1 APT LVL	1% to **10%** to 20%	
		ZEBRA2 DET LVL	52% to **100%** to 109%	
		VF DETAIL LEVEL	(–99 to 99)	
		VF ASPECT (SD) (When the REC FORMAT item is set to IMX50, IMX40, IMX30, or DVCAM)	**AUTO**/16:9	
		VF MARKER LEVEL	–99 to **0** to 52	

No.	Page	Item	Settings	Description
19	VF DETAIL	VF DETAIL	OFF/**ON**	*For details, see* "Setting the viewfinder" (page 203).
		VF DETAIL LEVEL	(–99 to 99)	
		CRISP	(–99 to 99)	
		FREQUENCY	9M/14M/**18M**	
		FAT MODE	**OFF**/ON	
		FLICKER	**OFF**/ON	
		COLOR DETAIL	**OFF**/ON	
		COLOR SEL	**BLUE**/RED/YELL	
		PEAK COLOR	**OFF**/ON	
		CHROMA LEVEL	0%/**25%**/50%/100%	
20	AUTO IRIS	IRIS OVERRIDE	**OFF**/ON	*For details, see "Changing the Reference Value for Automatic Iris Adjustment" (page 62).*
		IRIS SPEED	(–99 to 99)	
		CLIP HIGH LIGHT	**OFF**/ON	
		IRIS WINDOW	**1**/2/3/4/5/6/VAR	
		IRIS WINDOW IND	**OFF**/ON	
		IRIS VAR WIDTH	20 to **240** to 479	
		IRIS VAR HEIGHT	20 to **135** to 269	
		IRIS VAR H POS	–240 to **0** to 239	
		IRIS VAR V POS	–135 to **0** to 134	
21	SHOT ID	ID-1	**Blank**/up to 12 characters	*For details, see "Setting the shot ID" (page 205).*
		ID-2	**Blank**/up to 12 characters	
		ID-3	**Blank**/up to 12 characters	
		ID-4	**Blank**/up to 12 characters	
22	SHOT DISP	SHOT DATE	**OFF**/ON	*For details, see "Recording shot data superimposed on the color bars" (page 204).*
		SHOT TIME	**OFF**/ON	
		SHOT MODEL NAME	**OFF**/ON	
		SHOT SERIAL NO	**OFF**/ON	
		SHOT ID SEL	**OFF**/ID-1/ID-2/ID-3/ ID-4	
		SHOT 16:9 CHARA	**OFF**/ON	
		SHOT BLINK CHARA	**OFF**/ON	
23	SET STATUS	STATUS ABNORMAL	OFF/**ON**	*For details, see "Displaying the status confirmation screens" (page 206).*
		STATUS SYSTEM	OFF/**ON**	
		STATUS FUNCTION	OFF/**ON**	
		STATUS AUDIO	OFF/**ON**	
		STATUS GPS	OFF/**ON**	

No.	Page	Item	Settings	Description
24	WHITE SETTING	WHITE SWITCH <B>	**MEM**/ATW	Specifies the operating mode when the WHITE BAL switch is set to the B side. **MEM:** Auto white balance **ATW:** Auto tracing white balance
		SHOCKLESS WHITE	OFF/**1**/2/3	Specifies the transition time when the WHITE BAL switch is changed to a new setting (1 is fastest)
		ATW HOLD MEMORY	**OFF**/ON	Selects whether ATW (auto tracing white balance) settings are saved in the memory (A or B) selected by the WHITE BAL switch, in addition to the dedicated ATW memory. **OFF:** Not saved **ON:** Saved *For details, see "To save white balance settings obtained by ATW" (page 56).*
		ATW SPEED	1/2/3/**4**/5	Switches the transition speed of auto tracing white balance (ATW) (1 is fastest)
		AWB FIXED AREA	**OFF**/ON	Executes AWB (auto white balance) at the center of the screen.
		FILTER WHT MEM	OFF/**ON**	Specifies whether to allocate a white balance memory slot for each position number of the FILTER selector.
25	OFFSET WHT	OFFSET WHITE <A>	**OFF**/ON	*For details, see "Specifying an offset for the auto white balance setting" (page 216).*
		WARM-COOL <A>	Displays reference color temperature	
		WARM-COOL BAL <A>	(–99 to 99)	
		OFFSET WHITE <B>	**OFF**/ON	
		WARM-COOL <B>	Displays reference color temperature	
		WARM-COOL BAL <B>	(–99 to 99)	

No.	Page	Item	Settings	Description
26	SHT ENABLE	SHUTTER ECS	OFF/**ON**	*The items which can be set differ depending on the setting of the SYSTEM FREQUENCY item on the FORMAT page. For details, see "Setting the Electronic Shutter" (page 58).* When the recording format is 1080/23.98P, more shutter speeds can be selected and the SHT ENABLE 2 page appears to display them.
		SHUTTER SLS	**OFF**/ON	
		SHUTTER 1/32	OFF/**ON**	
		SHUTTER 1/33	OFF/**ON**	
		SHUTTER 1/40	OFF/**ON**	
		SHUTTER 1/48	OFF/**ON**	
		SHUTTER 1/50	OFF/**ON**	
		SHUTTER 1/60	OFF/**ON**	
		SHUTTER 1/96	OFF/**ON**	
		SHUTTER 1/100	OFF/**ON**	
		SHUTTER 1/120	OFF/**ON**	
		SHUTTER 1/125	OFF/**ON**	
		SHUTTER 1/250	OFF/**ON**	
		SHUTTER 1/500	OFF/**ON**	
		SHUTTER 1/1000	OFF/**ON**	
		SHUTTER 1/2000	OFF/**ON**	
27	LENS FILE	LENS FILE SELECT	**1** to 32	*For details, see "Selecting the lens file" (page 216).*
		F.ID	Display only	
		L.ID	Display only	
		L.MF	Display only	
28	FORMAT	SYSTEM LINE	**1080**/720	*The selectable SYSTEM FREQUENCY settings differ depending on the setting of SYSTEM LINE. For details, see "Setting the Recording Format" (page 51).*
		SYSTEM FREQUENCY	59.9i/29.9P/50i/25P/ 23.9P/59.9P/50P	
		REC FORMAT	**HD422 50**/HD420 HQ/ HD420 SP/IMX50/ IMX40/IMX30/ DVCAM	
		ASPECT RATIO (SD) (When the REC FORMAT item is set to IMX50, IMX40, IMX30, or DVCAM)	**16:9**/4:3	*The selectable settings differ depending on the setting of REC FORMAT. For details, see "Setting the Recording Format" (page 51).*
		AU DATA LEN (IMX) (When the REC FORMAT item is set to IMX50, IMX40, or IMX30)	**16bit**/24bit	
		COUNTRY	NTSC(J)AREA/NTSC AREA/PAL AREA	*For details, see "Setting the Area of Use" (page 37).*

No.	Page	Item	Settings	Description
29	SOURCE SEL	FRONT MIC SELECT (When stereo microphone is connected)	MONO/**STREO**	Input mode selection for front microphone.
		REC VIDEO SOURCE	**CAM**/EXT	*For details, see "Recording video from external devices" (page 96).*
		EXT VIDEO SOURCE	VBS/SDSDI/**HDSDI**	
		WIDE MODE(EXT)	**AUTO**/16:9	When the input signal is SD, select the method that determines whether the signal is treated as a wide signal. **AUTO:** When wide picture information is detected in the input signal, treat the signal as a wide signal and set the up-converter operating mode to squeeze mode. Record wide picture information when recording SD. When wide picture information is not detected, set the up-converter operating mode to edge crop mode and do not record wide picture information. **16:9:** Always treat the signal as a wide signal and set the up-converter operating mode to squeeze mode. Record wide picture information when recording SD.
		SETUP REMOVE (When the COUNTRY item is set to "NTSC(J)AREA" or "NTSC AREA")	0.0%/**7.5%**	Selects whether to modify the setup level of input video signals. **7.5%:** Remove the setup. (Select when signals with 7.5% setup are input.) **0.0%:** Do not remove the setup. (Select when signals without setup are input.)
30	UMID SET	COUNTRY CODE	**Blank**/up to 4 characters	*For details, see "Setting the UMID data" (page 217).*
		ORGANIZATION	**Blank**/up to 4 characters	
		USER CODE	**Blank**/up to 4 characters	
		TIME ZONE	**00** to 3F	

No.	Page	Item	Settings	Description
31	CLIP TITLE	TITLE	**DSABL**/ENABL	*For details, see "Assigning user-defined clip titles automatically" (page 89).*
		SELECT PREFIX (When the TITLE item is set to "ENABL")	EXEC	
		CLEAR NUMERIC (When the TITLE item is set to "ENABL")	EXEC	
		LOAD PREFIX DATA (When the TITLE item is set to "ENABL")	EXEC	
		PREFIX (When the TITLE item is set to "ENABL")	**TITLE**/up to 10 characters	
		NUMERIC (When the TITLE item is set to "ENABL")	**00001** to 99999	
32	FILE NAMING	NAMING FORM	C****/**FREE**	*For details, see "Assigning user-defined names to clips and clip lists" (page 92).*
		AUTO NAMING (When the NAMING FORM item is set to "FREE")	C****/TITLE/**PLAN**	
33	MEMORY REC	MEMORY REC	**DSABL**/ENABL	*For details, see "Recording proxy data" (page 98).*
		COPY CURRENT CLP	EXEC	
		COPY ALL CLIPS	EXEC	
		ABORT COPY	EXEC	
		DEL ALL MEM CLP	EXEC	
		FORMAT MEMORY	EXEC	
34	GPS SETUP	GPS	**OFF**/ON	*For details, see "Obtaining GPS location information" (page 101).*
		TIME ZONE		
		GPS DATUM		

PAINT menu

No.	Page	Item	Settings	Description
01	SW STATUS	GAMMA	OFF/**ON**	Turns the gamma correction on or off.
		BLACK GAMMA	**OFF**/ON	Turns the black gamma correction on or off.
		MATRIX	**OFF**/ON	Turns the linear matrix correction and user-set matrix correction functions on or off.
		KNEE	OFF/**ON**	Turns the knee correction on or off.
		WHITE CLIP	OFF/**ON**	Turns the white clipping correction on or off.
		DETAIL	OFF/**ON**	Turns the detail signal on or off.
		APERTURE	OFF/**ON**	Turns the aperture function on or off.
		FLARE	OFF/**ON**	Turns the flare function on or off.
		TEST SAW	**OFF**/ON	Selects the test signal.
02	WHITE	COLOR TEMP <A>	Displays reference color temperature.	Sets the color temperature of WHITE A.
		C TEMP BAL <A>	(–99 to 99)	Adjusts the value more precisely when the color temperature adjustment through COLOR TEMP is not satisfactory.
		R GAIN <A>	(–99 to 99)	Only the value of R GAIN is changed.
		B GAIN <A>	(–99 to 99)	Only the value of B GAIN is changed.
		COLOR TEMP <B>	Displays reference color temperature.	Sets the color temperature of WHITE B.
		C TEMP BAL <B>	(–99 to 99)	Adjusts the value more precisely when the color temperature adjustment through COLOR TEMP is not satisfactory.
		R GAIN <B>	(–99 to 99)	Only the value of R GAIN is changed.
		B GAIN <B>	(–99 to 99)	Only the value of B GAIN is changed.

No.	Page	Item	Settings	Description
03	BLACK/ FLARE	MASTER BLACK	(–99 to 99)	Adjusts the master black level.
		R BLACK	(–99 to 99)	Adjusts the R black level.
		B BLACK	(–99 to 99)	Adjusts the B black level.
		MASTER FLARE	(–99 to 99)	Adjusts the flare level of the master.
		R FLARE	(–99 to 99)	Adjusts the R flare level.
		G FLARE	(–99 to 99)	Adjusts the G flare level.
		B FLARE	(–99 to 99)	Adjusts the B flare level.
		FLARE	OFF/**ON**	Turns the flare correction circuit on or off.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the output signal of TEST OUT connector.
04	GAMMA	GAMMA	OFF/**ON**	Turns the gamma correction function on or off.
		STEP GAMMA	0.35 to **0.45** to 0.90	Sets the gamma correction curve by steps.
		MASTER GAMMA	(–99 to 99)	Sets the master gamma correction curve.
		R GAMMA	(–99 to 99)	Sets the R gamma correction curve.
		G GAMMA	(–99 to 99)	Sets the G gamma correction curve.
		B GAMMA	(–99 to 99)	Sets the B gamma correction curve.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the output signal of TEST OUT connector.
		GAMMA TABLE	**STD**/HG/USER	Selects the gamma type. **STD:** Standard gamma **HG:** Hyper gamma **USER:** User gamma
		GAM TABLE (STD)	1 to **5** to 6	Selects the standard gamma type. **1:** Corresponds to SD camcorder **2:** x 4.5 gain **3:** x 3.5 gain **4:** Corresponds to SMPTE-240M **5:** Corresponds to ITU-R709 **6:** x 5.0 gain
		GAM TABLE (HG)	1 to **4**	Selects the hyper gamma type. **1:** Compress 325% video input to100% video output. **2:** Compress 460% video input to100% video output. **3:** Compress 325% video input to109% video output. **4:** Compress 460% video input to109% video output.
		GAM TABLE (USER)	**1** to 5	Selects the user gamma type.

No.	Page	Item	Settings	Description
05	BLACK GAMMA	BLACK GAMMA	**OFF**/ON	Turns the black gamma correction on or off.
		BLACK GAM RANGE	LOW/L.MID/**H.MID**	Sets the range affected by black gamma.
		BLACK GAM LEVEL	(–99 to 99)	Adjusts the master black gamma.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the output signal of TEST OUT connector.
06	KNEE 1	KNEE	OFF/**ON**	Turns the knee correction circuit on or off.
		KNEE POINT (M)	50.0% to **95.0%** to 109.0%	Sets the knee point level.
		KNEE SLOPE (M)	(–99 to 99)	Set the knee slope level.
		KNEE SATURATION	OFF/**ON**	Turns the knee saturation function on or off.
		KNEE SAT LEVEL	(–99 to 99)	Sets the knee saturation level.
		WHITE CLIP	OFF/**ON**	Turns the white clipping function on or off.
		WHITE CLIP LEVEL	NTSC: 95.0% to **108.0%** to 109.0% PAL: 95.0% to **108.0%** to 109.0%	Adjusts the white clipping level.
07	KNEE 2	KNEE SATURATION	OFF/**ON**	Turns the Knee Saturation function on and off.
		KNEE POINT (R)	–45.0% to **0.0%** to 14.0%	When KNEE SATURATION is set to OFF, set the RGB knee point levels and knee slope levels individually.
		KNEE SLOPE (R)	(–99 to 99)	
		KNEE POINT (G)	–45.0% to **0.0%** to 14.0%	
		KNEE SLOPE (G)	(–99 to 99)	
		KNEE POINT (B)	–45.0% to **0.0%** to 14.0%	
		KNEE SLOPE (B)	(–99 to 99)	
08	DETAIL 1	DETAIL	OFF/**ON**	Sets the detail correction function on or off.
		APERTURE	OFF/**ON**	Turns the aperture correction function on or off.
		DETAIL LEVEL	(–99 to 99)	Sets the general level of the detail signal.
		APERTURE LEVEL	(–99 to 99)	Sets the aperture correction level.
		DTL H/V RATIO	(–99 to 99)	Sets the level of the V detail signal.
		CRISPENING	(–99 to 99)	Sets the crispening level.
		LEVEL DEPEND	OFF/**ON**	Turns the level depend function on or off.
		LEVEL DEPEND LVL	(–99 to 99)	Sets the level of the level depend.
		DETAIL FREQUENCY	(–99 to 99)	Sets the frequency of the H detail signal.

No.	Page	Item	Settings	Description
09	DETAIL 2	KNEE APERTURE	**OFF**/ON	Turns the knee aperture function on or off.
		KNEE APT LVL	(–99 to 99)	Sets the knee aperture level.
		DETAIL LIMIT	(–99 to 99)	Sets the both detail black and white limiters.
		DTL WHT LMT	(–99 to 99)	Sets the detail white limiter.
		DTL BLK LMT	(–99 to 99)	Sets the detail black limiter.
		DTL V-BLK LMT	(–99 to 99)	Sets the V detail black limiter.
		V DTL CREATION	NAM/G/**R+G**/Y	Selects the source signal of the V DTL signal.
		H/V CONTROL MODE	H/V /**V**	Selects the operation mode of DTL H/V RATIO on the DETAIL 1 page. **H/V:** H and V increase and decrease in inverse proportion **V:** V DTL only enabled
10	SD DETAIL	SD DETAIL	OFF/**ON**	Turns the SD detail correction on or off.
		SD DETAIL LEVEL	(–99 to 99)	Sets the general level of the SD detail signal.
		SD CRISPENING	(–99 to 99)	Sets the SD crispening level.
		SD DTL WHT LIMIT	(–99 to 99)	Sets the SD detail white limiter.
		SD DTL BLK LIMIT	(–99 to 99)	Sets the SD detail black limiter.
		SD LEVEL DEPEND	OFF/**ON**	Turns the SD level depend function on or off.
		SD LV DEPEND LVL	(–99 to 99)	Sets the level of the SD level depend.
		SD DTL FREQUENCY	(–99 to 99)	Sets the frequency of the SD H detail signal.
		SD DTL H/V RATIO	(–99 to 99)	Sets the level of the SD V detail signal.
		SD CROSS COLOR (When NTSC(J)AREA or NTSC AREA is selected on the FORMAT page)	(–99 to 99)	Sets the SD cross color reduction level.

No.	Page	Item	Settings	Description
11	SKIN DETAIL	SKIN DETAIL ALL	OFF/**ON**	Turns on or off all of channels 1, 2 and 3 for the color detail function.
		SKIN DETECT	Moves to color detection page.	Executes the color detail function.
		SKIN AREA IND	**OFF**/ON	Turns on and off the function that displays a zebra pattern where color was detected. When this is ON, a zebra pattern is output from the following connectors. • SDI OUT 2 connector (when all of the following are true: SDI OUT 2 SELECT on the OUTPUT 1 page is set to HDSDI, SDI OUT 2 SUPER is set to ON, and either SUPER(MENU) or SUPER(ZEBRA) on the SUPER IMPOSE page is set to ON) • TEST OUT connector (when both of the following are true: TEST OUT SUPER on the OUTPUT 1 page is set to ON, and SUPER(MENU) or SUPER(ZEBRA) on the SUPER IMPOSE page is set to ON)
		SKIN DTL SELECT	**1**/2/3	Selects the skin detail channel.
		SKIN DETAIL	OFF/**ON**	Sets CH 1/2/3, selected avobe, on/off.
		SKIN DETAIL LVL	(–99 to 99)	Sets the level of the color detail signal.
		SKIN DTL SAT	(–99 to 99)	Adjusts the saturation level of the hue possessed by the color detail function.
		SKIN DTL HUE	**0** to 359	Adjusts the center phase of the hue possessed by the color detail function.
		SKIN DTL WIDTH	0 to **39** to 359	Adjusts the width of the hue possessed by the color detail function.

No.	Page	Item	Settings	Description
12	MTX LINEAR	MATRIX	**OFF**/ON	Turns the linear matrix correction and user-set matrix correction functions on or off.
		MATRIX(USER)	**OFF**/ON	Turns the user-set matrix correction function on or off.
		MATRIX(PRESET)	OFF/**ON**	Turns the preset matrix correction function on or off.
		MATRIX(PRST) SEL	1/**2**/3/4/5/6	Selects the preset matrix correction function. **1:** SMPTE 240M equivalent **2:** ITU-709 equivalent **3:** SMPTE WIDE equivalent **4:** NTSC equivalent **5:** EBU equivalent **6:** ITU-601 equivalent
		MATRIX(USER) R-G	(–99 to 99)	Sets the arbitrary R-G user-set matrix coefficients.
		MATRIX(USER) R-B	(–99 to 99)	Sets the arbitrary R-B user-set matrix coefficients.
		MATRIX(USER) G-R	(–99 to 99)	Sets the arbitrary G-R user-set matrix coefficients.
		MATRIX(USER) G-B	(–99 to 99)	Sets the arbitrary G-B user-set matrix coefficients.
		MATRIX(USER) B-R	(–99 to 99)	Sets the arbitrary B-R user-set matrix coefficients.
		MATRIX(USER) B-G	(–99 to 99)	Sets the arbitrary B-G user-set matrix coefficients.

No.	Page	Item	Settings	Description
13	MTX MULTI	MATRIX	**OFF**/ON	Turns the linear matrix correction and multi matrix correction functions on or off.
		ADAPTIVE MATRIX	OFF/**ON**	Turns the adaptive matrix correction function (brightness tracking) on or off.
		ADAPTIVE MAX LVL	0 to **3** to 7	Sets the correction level of the adaptive matrix correction function.
		MATRIX (MULTI)	**OFF**/ON	Turns the multi matrix correction function on or off.
		MATRIX AREA IND	**OFF**/ON	Turns the zebra indication on or off in the area corresponding to the currently selected setting.
		MATRIX COLOR DET	Moves to color detection page.	Detects color.
		MTX(MULTI)PRESET	EXEC	Return MTX(MULTI)HUE and MTX(MULTI)SAT values to preset values for each of the 16 axes.
		MTX (MULTI) AXIS	**B**/B+/MG–/MG/MG+/R/R+/YL–/YL/YL+/G–/G/G+/CY/CY+/B–	Sets 16 hue axes as the targets of the multi matrix correction function.
		MTX (MULTI) HUE	(–99 to 99)	Sets hue correction values for each of the 16 axis modes.
		MTX (MULTI) SAT	(–99 to 99)	Sets saturation correction values for each of the 16 axis modes.
14	V MODULATION	V MOD	OFF/**ON**	Turns the V modulation function on or off.
		MASTER VMOD	(–99 to 99)	Adjusts the master V modulation level.
		R VMOD	(–99 to 99)	Adjusts the R V modulation level.
		G VMOD	(–99 to 99)	Adjusts the G V modulation level.
		B VMOD	(–99 to 99)	Adjusts the B V modulation level.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the output signal of the TEST OUT connector.
15	SATURATION	LOW KEY SAT	**OFF**/ON	Turns the low key saturation function on or off.
		L KEY SAT LEVEL	(–99 to 99)	Sets the saturation level of the low luminance part.
		L KEY SAT RANGE	LOW/L.MID/**H.MID**	Sets the luminance level at which the low key saturation function becomes effective.

No.	Page	Item	Settings	Description
16	SATURATION MODE	SATURATION MODE	**KNEE**/L KEY	Switches the saturation function mode. High-intensity processing (KNEE SAT) or low-intensity processing (BLACK GAMMA/ LOWKEY AST) can be selected.
		KNEE SATURATION	**OFF**/ON	Turns the knee saturation on/off when SATURATION MODE is set to KNEE.
		BLACK GAMMA	**OFF**/ON	Turns black gamma correction on/off when SATURATION MODE is set to L.KEY.
		LOW KEY SAT	**OFF**/ON	Turns the LOW KEY SATURATION function on/off when SATURATION MODE is set to L.KEY.
17	NOISE SUPPRESS	NOISE SUPPRESS	OFF/**ON**	Turn on and off the noise suppression function.
		NOISE SUP LEVEL	OFF/**LOW**/HIGH	Selects the level of the noise suppression function.
18	SCENE FILE	1	STANDARD	Recalls the scene file saved in the memory of the camcorder.
		2	STANDARD	
		3	STANDARD	
		4	STANDARD	
		5	STANDARD	
		STANDARD	–	Clears all current detail-adjusted settings and switch settings and returns the settings to the standard settings saved in the reference file.
		SCENE RECALL	EXEC	Recalls the scene file from the memory of the camcorder or the USB flash drive.
		SCENE STORE	EXEC	Stores the scene file in the memory of the camcorder or the USB flash drive.
		F.ID	**Blank**/up to 16 characters	Sets the File ID.

MAINTENANCE menu

No.	Page	Item	Settings	Description
01	WHITE SHADING	WHT SHAD CH SEL	**R**/G/B/TEST	Selects the channel adjusted by this menu. If TEST is selected, the setting is linked to the setting of TEST OUT SELECT.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.
		R/G/B WHT H SAW	(–99 to 99)	H Saw white shading compensation.
		R/G/B WHT H PARA	(–99 to 99)	H Parabola white shading compensation.
		R/G/B WHT V SAW	(–99 to 99)	V Saw white shading compensation.
		R/G/B WHT V PARA	(–99 to 99)	V Parabola white shading compensation.
		WHITE SAW/ PARA	OFF/**ON**	Turns white shading Saw and Parabola compensation on and off.
02	BLACK SHADING	BLK SHAD CH SEL	**R**/G/B/TEST	Selects the channel adjusted by this menu. If "TEST" is selected, the setting is the same as the setting of TEST OUT SELECT.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.
		R/G/B BLK H SAW	(–99 to 99)	H Saw black shading compensation.
		R/G/B BLK H PARA	(–99 to 99)	H Parabola black shading compensation.
		R/G/B BLK V SAW	(–99 to 99)	V Saw black shading compensation.
		R/G/B BLK V PARA	(–99 to 99)	V Parabola black shading compensation.
		BLACK SAW/ PARA	OFF/**ON**	Turns black shading Saw and Parabola compensation on and off.
		MASTER BLACK	(–99 to 99)	Master black level adjustment.
		MASTER GAIN(TMP)	–6dB/–3dB/**0dB**/ 3dB/6dB/9dB/ 12dB/18dB/ 24dB/30dB/ 36dB/42dB	Temporarily adjusts the master gain value.
03	LEVEL ADJUST	VBS VIDEO LEVEL	(–99 to 99)	Adjusts the composite signal video level.
		HD-Y LEVEL	(–99 to 99)	Adjusts the Y level of the HD component signal.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.

No.	Page	Item	Settings	Description
04	BATTERY 1 **Note** For your safety, and to ensure proper operation of the camcorder, Sony recommends the use of the following battery packs: BP-L80S and BP-FL75.	Info BEFORE END	**5%**/10%/15%...95%/100%	Used when a BP-GL65A/GL95A/FLX75 Battery Pack is used. Sets the remaining power (% value) of the battery at which the BEFORE END warning should be issued.
		Info END	**0%**/1%/2%/3%/4%/5%	Used when a BP-GL65A/GL95A/FLX75 Battery Pack is used. Sets the remaining power (% value) of the battery at which the END warning should be issued.
		Sony BEFORE END	**11.5V** to 17.0V (in 0.1V steps)	Used when a BP-L60S/L80S Battery Pack is used. Sets the voltage level of the battery at which the BEFORE END warning should be issued. [a)]
		Sony END	**11.0V** to 11.5V (in 0.1V steps)	Used when a BP-L60S/L80S Battery Pack is used. Sets the voltage level of the battery at which the END warning should be issued. [b)]
		Other BEFORE END	11.5V to **11.8V** to 17.0V (in 0.1V steps)	Used when a battery pack other than a Sony battery pack is used. Sets the voltage level of the battery at which the BEFORE END warning should be issued.
		Other END [c)]	**11.0V** to 14.0V (in 0.1 V steps)	Used when a battery pack other than a Sony battery pack is used. Sets the voltage level of the battery at which the END warning should be issued.
		DC IN BEFORE END	11.5V to **11.8V** to 17.0V (in 0.1 V steps)	Used when an external power source is connected to the DC IN connector. Sets the voltage level of the connected external power source at which the BEFORE END warning should be issued.
		DC IN END	**11.0V** to 14.0V (in 0.1 V steps)	Used when an external power source is connected to the DC IN connector. Sets the voltage level of the connected external power source at which the END warning should be issued.
		DETECTED BATTERY	Info/Sony/Other/DC IN	Displays the type of automatically detected battery.

No.	Page	Item	Settings	Description	
05	BATTERY 2	TYPE DETECTION	**AUTO**/OTHER	**AUTO:** Automatically detects the type of the battery. **OTHER:** Always judges the battery to be of the "OTHER"[c] type regardless of the actual battery type.	
		SEGMENT NO.7	11.0V to **17.0V** (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No.7 should turn off.	Battery status indicator segments ("E"[d] and "F" are always on.)
		SEGMENT NO.6	11.0V to **16.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 6 should turn off.	
		SEGMENT NO.5	11.0V to **15.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 5 should turn off.	
		SEGMENT NO.4	11.0V to **14.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 4 should turn off.	
		SEGMENT NO.3	11.0V to **13.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 3 should turn off.	
		SEGMENT NO.2	11.0V to **12.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 2 should turn off.	
		SEGMENT NO.1	**11.0V** to 17.0V (in 0.1 V steps)	When the battery type judgment is "OTHER", sets the voltage level below which the battery status indicator segment No. 1 should turn off.	

No.	Page	Item	Settings	Description
06	AUDIO-1	FRONT MIC SELECT	MONO/**STREO**	Input mode selection for front microphone.
		AUDIO CH3/4 MODE	CH1/2/**SW**	Selects the sources to be recorded to channels CH-3/4. **CH1/2**: Same sources as CH-1/2. **SW:** Signals selected by the AUDIO IN CH-3/CH-4 switches.
		REAR XLR AUTO	**OFF**/ON	Turns the XLR connection automatic detection on or off.
		FRONT MIC REF	–60dB/**–50dB**/–40dB	Sets the reference level of the front microphone.
		REAR MIC REF	**–60dB**/–50dB/–40dB	Sets the reference level when the AUDIO IN CH1 connector is set to MIC.
		MIN ALARM VOL	**OFF**/SET	Volume of the monitor speaker alarm tone when it is turned all the way down. **OFF:** Almost inaudible. **SET:** Faintly audible.
		SP ATT LEVEL	**OFF**/3dB/6dB/9dB	Lowers the volume of the monitor speaker. Has no effect on earphone volume.
		HEADPHONE OUT	**MONO**/STREO	Selects whether to make the rear earphone monaural or stereo.
07	AUDIO-2	AU DATA LEN (IMX)	**16bit**/24bit	*For details, see "Setting the Recording Format" (page 51).*
		AU REF LEVEL	**–20dB**/–18dB/–16dB/–12dB/EBUL	Sets the output level of the 1 kHz test signal.
		AU REF OUT	**0dB**/+4dB/–3dB/EBUL	Sets the output reference level.
		AU CH12 AGC MODE	**MONO**/STREO	Selects whether to perform automatic input level adjustment of analog audio signals to be recorded on channels 1 and 2 independently for each channel, or in stereo mode.
		AU CH34 AGC MODE	**MONO**/STREO/OFF	Selects whether to perform automatic input level adjustment of analog audio signals to be recorded on channels 3 and 4 independently for each channel, or in stereo mode, or not at all (OFF).
		AU AGC SPEC	**–6dB**/–9dB/–12dB/–15dB/–17dB	AGC saturation level setting.
		AU LIMITER MODE	**OFF**/–6dB/–9dB/–12dB/–15dB/–17dB	For manual audio input level adjustment, selects the limiter saturation level for loud input signals.
		AU OUT LIMITER	OFF/**ON**	Turns the audio output limiter on or off.

No.	Page	Item	Settings	Description
08	AUDIO-3	AU SG (1KHz)	ON/**OFF**/AUTO	Sets whether to output a 1 kHz test tone during the Color Bar mode or not. **ON:** A 1 kHz test tone is output during the Color Bar mode. **OFF:** A 1 kHz test tone is not output during the Color Bar mode. **AUTO:** A 1 kHz test tone is output only when the AUDIO SELECT CH-1 switch on the inside panel is in the AUTO position.
		MIC CH1 LEVEL	SIDE1/**FRONT**/F+S1	When recording the front microphone sound on CH 1, selects which control is to be used for the level adjustment. **SIDE 1:** LEVEL control (left side) **FRONT:** MIC LEVEL control **F+S1:** LEVEL control (left side) or the MIC LEVEL control (The two controls are linked to each other.)
		MIC CH2 LEVEL	SIDE2/**FRONT**/F+S2	When recording the front microphone sound on CH 2, selects which control is to be used for the level adjustment. **SIDE 2:** LEVEL control (right side) **FRONT:** MIC LEVEL control **F+S2:** LEVEL control (right side) or the MIC LEVEL control (The two controls are linked to each other.)
		REAR1/WRR LEVEL	**SIDE1**/FRONT/F+S1	Selects any of these controls to adjust the audio level of the equipment that is connected to the wireless microphone and whatever is connected to the AUDIO IN CH1 connector on the rear panel. **SIDE 1:** LEVEL control (left side) **FRONT:** MIC LEVEL control **F+S1:** LEVEL control (left side) or the MIC LEVEL control (The two controls are linked to each other.)
		REAR2/WRR LEVEL	**SIDE2**/FRONT/F+S2	Selects any of these controls to adjust the audio level of the equipment that is connected to the wireless microphone and whatever is connected to the AUDIO IN CH2 connector on the rear panel. **SIDE 2:** LEVEL control (right side) **FRONT:** MIC LEVEL control **F+S2:** LEVEL control (right side) or the MIC LEVEL control (The two controls are linked to each other.)
		AUDIO CH3 LEVEL [e)]	**FIX**/FRONT	Selects the audio level recorded on channel 3. **FIX:** Fixed **FRONT:** Level as adjusted by the MIC LEVEL control on the front panel of the camcorder

No.	Page	Item	Settings	Description
08	AUDIO-3	AUDIO CH4 LEVEL [e)]	**FIX**/FRONT	Selects the audio level recorded on channel 4. **FIX:** Fixed **FRONT:** Level as adjusted by the MIC LEVEL control on the front panel of the camcorder

No.	Page	Item	Settings	Description
09	WRR SETTING	WRR VALID CH SEL [f]	**ALL**/CH1	Selects whether to enable channels 1 and 2 of the wireless receiver, or channel 1 only. **ALL:** Enable both channel 1 and 2. **CH1:** Enable channel 1 only. Select this setting to use the wireless receiver as a monaural receiver.
		WRR CH SELECT [f]	**TX1**/TX2	Specifies the target channel for other items in this menu. **TX1:** Channel 1 **TX2:** Channel 2
		WRR DELAY COMP [f]	OFF/**ON**	Enables or disables the delay compensation function for wireless audio input. **OFF:** Disables the function. **ON:** Enables the function (the audio in all EE output is delayed by about 8 ms).
		TX* (*: channel number) [f]	–	Displays the name of the transmitter whose signals are being received on the channel selected by WRR CH SELECT. The channel number and name shown here are recorded inside the <Description> tag in the clip metadata file C*M01.XML (where * is 0001 to 9999).
		TX* AUDIO PEAK (*: channel number) [f]	**---**/PEAK	Displays whether the AF level of the transmitter whose signals are being received on the channel selected by WRR CH SELECT is over the peak.
		TX* INPUT LEVEL (*: channel number) [f]	MIC/LINE	Displays whether the input level of the transmitter whose signals are being received on the channel selected by WRR CH SELECT is set to MIC or LINE.
		TX* ATT LEVEL (*: channel number) [f]	–	Sets the ATT level of the transmitter whose signals are being received on the channel selected by WRR CH SELECT (the permissible setting range may vary depending on the transmitter device).
		TX* LCF FREQ (*: channel number) [f]	–	Sets the Low Cut Filter frequency of the transmitter whose signals are being received on the channel selected by WRR CH SELECT (the permissible setting range may vary depending on the transmitter device).
		TX* SYSTEM DELAY (*: channel number) [f]	**AUTO/** 0.0ms~8.0ms	Sets the amount of audio delay for the channel selected by WRR CH SELECT. **AUTO:** Automatically adjusts the amount of delay so that the delay in the audio received from the wireless receiver is zero. **0.0ms~8.0ms:** Sets the amount of anticipated wireless system delay, for cases in several wireless systems are being used over a device such as an audio mixer.

No.	Page	Item	Settings	Description
10	TIMECODE	TC OUT	**AUTO**/GENE	Selects the timecode signal output. **AUTO:** Outputs the timecode generator output during recording and outputs the timecode reader output during playback. **GENE:** Outputs the timecode generator output during recording and playback.
		DF/NDF (When SYSTEM FREQUENCY is set to 59.94i, 29.97P, or 59.94P)	**DF**/NDF	Sets DF or NDF mode. **DF:** Drop frame mode **NDF:** Non-drop frame mode
		EXT-LK DF/NDF (When SYSTEM FREQUENCY is set to 59.94i, 29.97P, or 59.94P)	**INT**/EXT	Selects either internal setting or external setting for DF/NDF. **INT:** Internal **EXT:** External
		EXT-LK UBIT	**INT**/EXT	Sets whether the LTC UBIT setup value locks to an INT or an EXT source when the timecode is locked to an external source. **INT:** Internal lock **EXT:** External lock
		LTC UBIT	**FIX**/TIME	Sets the data to be recorded in U-BIT of LTC. **FIX:** Records the data that is set by the user. **TIME:** Records the present time.
		VITC UBIT (SD)	**FIX**/TIME	Sets the data to be recorded in U-BIT of VITC. **FIX:** Records the data that is set by the user. **TIME:** Records the present time.
		WATCH AUTO ADJ	OFF/**ON**	Matches the time of the internal clock with the time data of the user bits of an external timecode. Turns the automatic time correction function of the internal clock on or off.
		UBIT GROUP ID	**000**/101	Selects the U-BIT GROUP ID.
		VITC INS LINE 1	NTSC: 12H to **16H** to 19H PAL: 9H to **19H** to 22H	Selects the line into which VITC is to be inserted.
		VITC INS LINE 2	NTSC: 12H to **18H** to 19H PAL: 9H to **21H** to 22H	

No.	Page	Item	Settings	Description
11	ESSENCE MARK	RET SHOT MARK 1	OFF/**ON**	*For details, see "Recording essence marks" (page 80).*
		RET SHOT MARK 2	OFF/**ON**	
		INDEX PIC POS	**0SEC** to 10SEC (in 1 sec steps)	*For details, see "Setting the thumbnail image at recording time" (page 81).*
		FIND MODE	**R.ST**/CLIP	Specify the frame to be cued up when the PREV or NEXT button is pressed. **R.ST:** The frame where a Rec Start essence mark is set **CLIP:** The first frame of the clip

No.	Page	Item	Settings	Description
12	CAM CONFIG 1	REC TALLY BLINK	OFF/**ON**	Turns the tally illumination control on or off when the battery is almost exhausted or the disc is almost full.
		REC START BEEP	**OFF**/ON	Turns the REC START/STOP alarm sound on or off.
		SDI REC CONTROL	**OFF**/RM/PARA	Specifies the function for enabling synchronized recording with the unit. **RM:** A REC trigger signal is output to the recorder connected to the SDI OUT connector. **PARA:** Controls synchronized recording with the unit.
		HDSDI REMOTE I/F	**CHARA/** G-TLY/R-TLY	Selects whether to use the function that enables recording control from this unit of an external device connected to the CA (camera adaptor) or one of the SDI OUT 1/2 connectors (HDSDI output) of this unit. g) Also selects the indication that shows whether the external device is recording. **CHARA:** Use the function, and indicate by the controlling external device indicator in the viewfinder *(see page 30)*. **G-TLY:** Use the function, and indicate by the TALLY indicator in the viewfinder. **R-TLY**: Use the function, and indicate by the REC (recording, red tally) indicator in the viewfinder. **Note** When R-TLY is selected, the TALLY indicator lights even when the unit is not recording.
		MATCH CLIP NAME	**OFF**/ON	Specifies whether to superimpose clip name information on the HDSDI output on the SDIOUT 1/2 connectors. A clip with the same name as on the camera is created on supported devices.
		PROAV DISPLAY	**DSABL**/ENABL	Specifies whether to display the PROAV directory when this unit is accessed via an FTP connection. **DSABL:** Do not display. **ENABL:** Display.
		MIXED RECORDING	**DSABL**/ENABL	*For details, see "Mixed recording of clips in different formats on the same disc" (page 52).*
		SINGLE CLIP MODE	**OFF**/ON	*For details, see "Clip playback modes" (page 77).*
		PB POSITION	**KEEP**/TOP	When you switch between the clip playback screen and the clip list playback screen, specifies the clip or sub clip playback start position. **KEEP:** Play from the position where playback stopped. **TOP:** Play from the first frame of the first clip or sub clip.

No.	Page	Item	Settings	Description
13	CAM CONFIG 2	TEST SAW SELECT	**SAW**/REC	Selects the test signal.
		COLOR BAR SELECT	**ARIB**/100%/ 75%/SMPTE	Selects the HD color bar type.
		USER & ALL ONLY	**OFF**/ON	Show only USER menu in the top menu.
		RM COMMON MEMORY	**OFF**/ON	Selects whether or not to share settings for when a remote control unit is connected and when the unit is used alone.
		RM REC START	**RM**/CAM/ PARA	When an RM remote control unit is connected, selects which recording start/stop buttons are enabled. **RM:** remote control unit **CAM:** camcorder **PARA:** both
		SHT DISP MODE	**SEC**/DEG	Selects shutter speed display (seconds or degrees).
		RM F NO DISPLAY	**CTRL**/RET	Switches the iris F value display type on remote control units such as the MSU-900. **CTRL:** Display based on control value from camera **RET:** Display based on position value from lens
		FAN CONTROL	**AUTO**/R.MIN/ MIN	Specifies the control method for the cooling fan. (This setting is retained even when the unit is powered off.) **AUTO:** Control the rotation of the cooling fan automatically. **R.MIN:** Rotate the cooling fan at low speed during recording only (and stop the rotation when this unit is used in an environment so cool that temperatures inside the unit do not rise). **MIN:** Rotate the cooling fan at low speed (and stop the rotation when this unit is used in an environment so cool that temperatures inside the unit do not rise). **Note** Regardless of this setting, the cooling fan rotates at high speed if temperatures inside the unit rise to a temperature near the alarm level.

No.	Page	Item	Settings	Description
14	CAM CONFIG 3	ALAC	OFF/**AUTO**	Specifies whether to activate the aberration correction function. **OFF:** Do not activate. **AUTO:** Activate aberration correction when a lens that supports aberration correction is mounted. **Note** For some aberration correction lenses, the aberration correction function may not activate (“ALAC” does not appear in the viewfinder) immediately after this unit is powered on, even when this item is set to “AUTO”. If this occurs, turn the zoom and focus rings of the lens all the way to one side, and then check to make sure that “ALAC” has appeared in the viewfinder. *Contact your dealer or a Sony service representative for more information about lenses that support aberration correction.*
		Wi-Fi/ETHER RM	**OFF**/RM/ALL	Selects remote control of the camera using a Wi-Fi or Ethernet connection. **OFF:** Remote control disabled. **RM:** Remote control operation of the camera is supported via an CBK-WA100, but main-line output (broadcast) is not supported. **ALL:** Remote control of the camera and main-line output (broadcast) is supported.
15	PRESET WHITE	COLOR TEMP <P>	Display reference color temperature.	Sets the white balance preset value.
		C TEMP BAL <P>	(–99 to 99)	Finer setting when the desired color could not be obtained with the COLOR TEMP <P> color temperature setting.
		R GAIN <P>	(–99 to 99)	Sets the R gain preset value.
		G GAIN <P>	(–99 to 99)	Sets the G gain preset value.
		AWB ENABLE <P>	**OFF**/ON	When the WHITE BAL switch is set to PRST, turns the function that enables execution of AWB (auto white balance) on and off.

No.	Page	Item	Settings	Description
16	DCC ADJUST	DCC FUNCTION SEL	**DCC**/FIX	Enables or disables automatic knee point adjustment when the OUTPUT/DCC switch is set to CAM, DCC: ON. **DCC:** Automatically adjust the knee point according to the luminance of the subject. **FIX:** Set the knee point to a fixed value.
		DCC D RANGE	400%/450%/ 500%/550%/ **600%**	Sets the dynamic range when the OUTPUT/ DCC switch is set to CAM, DCC: ON.
		DCC POINT	(–99 to 99)	Adjusts the DCC minimum knee point.
		DCC GAIN	(–99 to 99)	Adjusts the gain to DCC detected value.
		DCC DELAY TIME	(–99 to 99)	Adjusts the DCC reaction speed.
		DCC PEAK FILTER	(–99 to 99)	Adjusts the response sensitivity to the peak of the DCC detected value.
17	AUTO IRIS 2	IRIS WINDOW	**1**/2/3/4/5/6/VAR	Selects the auto iris detection window. **VAR:** variable
		IRIS WINDOW IND	**OFF**/ON	Turns on and off the function which displays a frame marker for the auto iris detection window.
		IRIS LEVEL	(–99 to 99)	Adjusts the level of the auto iris target value.
		IRIS APL RATIO	(–99 to 99)	Adjusts the mix ratio of auto iris detection peak value and average value.
		IRIS VAR WIDTH	20 to **240** to 479	Adjusts the width of detection frame when the auto iris detection window is set to VAR.
		IRIS VAR HEIGHT	20 to **135** to 269	Adjusts the height of detection frame when the auto iris detection window is set to VAR.
		IRIS VAR H POS	–240 to **0** to 239	Adjusts the horizontal position of detection frame when the auto iris detection window is set to VAR.
		IRIS VAR V POS	–135 to **0** to 134	Adjusts the vertical position of detection frame when the auto iris detection window is set to VAR.
		IRIS SPEED	(–99 to 99)	Adjusts the auto iris speed.
		CLIP HIGH LIGHT	**OFF**/ON	Turns on and off the function which, during auto iris adjustment, ignores very bright areas by dulling the reaction to high luminescence.

No.	Page	Item	Settings	Description
18	GENLOCK	GENLOCK	OFF/**ON**	Turns genlock on and off.
		GL HD H PHASE	(–99 to 99)	Sets the HD output H phase for genlock operation.
		GL SD H PHASE (Does not appear when the FORMAT page item SYSTEM LINE is set to 1080 and the SYSTEM FREQUENCY item is set to 23.9P)	(–99 to 99)	Sets the SD output H phase for genlock operation.
		REFERENCE	INTERNAL/ GENLOCK/ SDI IN	Displays the type of reference signal used by this unit.
19	ND COMP	ND OFFSET ADJUST	**OFF**/ON	Turns on and off the mode which sets ND (neutral density) filter color compensation values.
		CLEAR ND OFFSET	EXEC	Clears ND filter color compensation values.
20	AUTO SHADING	AUTO BLK SHADING	EXEC	Executes the auto black shading correction function. If executed when in SLS (slow-speed shutter) mode, this performs only fine compensation on edge portions of the screen.
		RESET BLK SHD	EXEC	Clear black shading compensation values.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.
		MASTER GAIN(TMP)	–6dB/–3dB/**0dB**/ 3dB/6dB/9dB/ 12dB/18dB/ 24dB/30dB/ 36dB/42dB	Temporarily sets the master gain value.
21	APR	APR	EXEC	Suppresses white flecks by executing the automatic pixel noise reduction function.
		APR(SLS)	EXEC	Suppresses white flecks in SLS (Slow Speed Shutter) mode by executing the automatic pixel noise reduction function. [h)] **Note** The execution time for this function is about 30 minutes. More time may be required when temperatures inside the unit are low.
		APR PRESET	EXEC	Deletes white flecks data that was added by execution of the APR and automatic black balance adjustment functions.
		APR ON ABB	**OFF**/ON	**OFF:** Do not execute APR on ABB. **ON:** Execute APR on ABB.

No.	Page	Item	Settings	Description
22	NETWORK 1 **Note** This menu is not used when using the CBK-WA100 Wireless Adaptor.	NETWORK SETUP	EXEC	Displays the NETWORK SETTING page, so that you can make network settings.
		SECURITY	Display only	Network security level
		DHCP	Display only	Enables or disables automatic acquisition of an IP address from a DHCP server
		IP ADDRESS	Display only	IP address
		SUBNET MASK	Display only	Subnet mask
		DEF.GATEWAY	Display only	Default gateway
		LINK SPEED	Display only	Link speed
		DUPLEX	Display only	Communications method
		DNS1	Display only	DNS server 1
		UPnP	Display only	Enable or disable UPnP.
	NETWORK SETTING **Note** This menu is not used when using the CBK-WA100 Wireless Adaptor.	SECURITY	**LEVEL1**/ LEVEL2	**LEVEL1:** Do not encrypt user name and password for HTTP communications. Clips are transferred using FTP. **LEVEL2:** Encrypt user name and password for HTTP communications. Clips are transferred using FTPS. Direct FTP transfer, live logging function, and thumbnail display on webpages are not supported.
		DHCP	ENABLE/ **DISABLE**	Selects whether to enable automatic acquisition of the IP address from a DHCP server. **Notes** • IP address, subnet mask, default gateway, and DNS server 1 and 2 cannot be set when DHCP is set to “ENABLE”. • To check automatically acquired settings, close the menu and open it again.
		IP ADDRESS	xxx.xxx.xxx.xxx **192.168.1.10**	Set the IP address of this unit.
		SUBNET MASK	xxx.xxx.xxx.xxx **255.255.255.0**	Sets the subnet mask.
		DEF.GATEWAY	xxx.xxx.xxx.xxx **0.0.0.0**	Set the address of the default gateway.
		LINK SPEED	**AUTO**/10Mbps/ 100Mbps	Sets the communications speed.
		DUPLEX	**AUTO**/FULL/ HALF	Sets the duplex mode.
		DNS1	xxx.xxx.xxx.xxx **0.0.0.0**	Set the address of DNS server 1.
		DNS2	xxx.xxx.xxx.xxx **0.0.0.0**	Set the address of DNS server 2.
		UPnP	**DISABLE**/ ENABLE	Select whether to enable the UPnP (universal plug and play) function. **DISABLE:** Disable the UPnP function. **ENABLE:** Enable the UPnP function.

No.	Page	Item	Settings	Description
23	NETWORK 2	NET CFG RESET	EXEC	Reset network settings to the factory defaults.
		MAC	Display only	MAC address of this unit
24	WPS	Wi-Fi	**DSABL**/ENABL	*For details, see "To specify a connection destination by WPS operations" (page 215).*
		WPS MODE	**ONE PUSH**/ PIN CODE	
		PIN	UPDATE	
		WPS START	EXEC	
		WPS STATUS	Display only	

No.	Page	Item	Settings	Description
25	Wi-Fi **Note** This menu is not used when using the CBK-WA100 Wireless Adaptor.	Wi-Fi SETUP	EXEC	Displays the Wi-Fi SETTING page so that you can make wireless LAN settings.
		Wi-Fi STATUS	[-----]/ [■■■■■]/ CONNECT (display only)	Communication/connection status **■■■■■:** Displays the signal strength by the number of ■'s. **CONNECT:** Executing the connection sequence
		WIRELESS MODE	----/802.11b/ 802.11g/802.11n (display only)	IEEE 802.11 standard
		SSID	(unknown)/up to 32 characters (display only)	Network name
		NETWORK TYPE	----/INFRA/ ADHOC (display only)	Connection mode
		CH	--/1 to 14 (display only. 13 and 14 are for automatically detected channels only.)	Wireless channel
		AUTH	----/OPEN/ SHARED/WPA/ WPA2 (display only)	Network authentication
		ENCRYPTION	----/DISABLE/ WEP/TKIP/AES (display only)	Data encryption
	Wi-Fi SETTING **Note** This menu is not used when using the CBK-WA100 Wireless Adaptor.	SCAN NETWORKS	EXEC	*For details, see "Setting up a wireless LAN" (page 212).*
		SSID	**Blank**/up to 32 characters	
		NETWORK TYPE	INFRA/ **ADHOC**	
		CH	**1** to 11	
		AUTH	**OPEN**/ SHARED/WPA/ WPA2	
		ENCRYPTION	**DISABLE**/ WEP/TKIP/AES	
		WEP KEY INDEX	**1**/2/3/4	
		INPUT SELECT	**ASCII5**/ ASCII13/ HEX10/HEX26	
		KEY	**Blank**/up to 26 characters	

No.	Page	Item	Settings	Description
26	UP CONVERTER	UP CON PROCESS	FIELD/**ADPT**	Selects the conversion source picture when SD is upconverted to HD. **FIELD:** Use the field picture. **ADPT:** Optimize the ratio of conversion from the frame or field picture.
		UC DETAIL LEVEL	(–99 to 99)	Adjusts the sharpness of edge enhancement by the upconverter.
		UC CRISPENING	(–8 to 7)	Sets the amplitude width at which the upconverter does not emphasize low-amplitude signals.
		UC DETAIL LIMIT	(–99 to 99)	Sets the maximum level of edge enhancement by the upconverter.
		UC LV DEPEND LVL	(–8 to 7)	Sets the luminance of edge enhancement by the upconverter.
		UC DTL FREQUENCY	3.2M/4.5M/ **5.0M**/4.0M	Sets the center frequency and frequency properties of edge enhancement by the upconverter. **3.2M:** 3.2 ± 1.1 MHz **4.5M:** 4.5 ± 1.4 MHz **5.0M:** 5.0 ± 0.7 MHz **4.0M:** 4.0 ± 2.0 MHz
		UC DTL H/V RATIO	(–3 to 4)	Sets the horizontal/vertical ratio of edge enhancement by the upconverter.
27	SHUTTER SELECT	SHUTTER SELECT	**SECOND**/ DEGREE	Selects the shutter speed display unit. **SECOND:** Second units **DEGREE:** Degree units (shutter opening angle) *See page 60 for more information about degree unit settings.*
		ADD (only when SHUTTER SELECT is set to “DEGREE”)	360.0 to **180.0** to 4.5 (upper limit of shutter angle degrees)	Registers a shutter degree setting in an empty number from 1 to 6 (this item is disabled if no number is empty).
		DEL (only when SHUTTER SELECT is set to “DEGREE”)	–	Deletes the setting assigned to a number from 1 to 6 (numbers with no settings assigned cannot be selected).
		1 to 6 (only when SHUTTER SELECT is set to “DEGREE”)	Display only	Displays the shutter opening angle assigned to number 1 to 6, and the corresponding speed in second units, as calculated on the basis of the selected frame rate.This differs as follows, depending on the setting of SYSTEM FREQUENCY. **59.94i, 29.97P:** 1: 216.0, 2: 180.0, 3: 90.0, 4: 45.0, 5: 22.5, 6: 11.2 **50i, 25P:** 1: 180.0, 2: 150.0, 3: 90.0, 4: 45.0, 5: 22.5, 6: 11.2 **23.98P**: 1: 180.0, 2: 172.8, 3: 144.0, 4: 45.0, 5: 22.5, 6: 11.2

No.	Page	Item	Settings	Description
28	META OUT	META DATA ITEM OUT	OFF/**ON**	Sets whether to put recorded VANC packet information in DATA ITEM in MXF files when transferring files via FTP. **OFF:** Do not include VANC packet information. **ON:** Include VANC packet information.
29	HEADSET SELECT (CA-FB70, CA-TX70 Camera Adaptors only)	INTER MIC SEL	**DYNAMIC**/ CARBON/ MANUAL	Sets the type of the INTERCOM microphone.
		INTER MIC LEVEL	–60dB/–40dB/ –20dB	Sets the level of the INTERCOM microphone (–60dB is seleted when MIC SEL is set to DYNAMIC, and –20dB is seleted when MIC SEL is set to CARBON).
		INTER MIC GAIN	–6dB/**0dB**/+6dB	Sets the gain of the INTERCOM microphone.
		INTER MIC POWER	OFF/ON	Turns the power supply for the INTERCOM microphone on/off (OFF is seleted when MIC SEL is set to DYNAMIC, and ON is seleted when MIC SEL is set to CARBON).
		INTER MIC UNBAL	**OFF**/ON	Turns unbalanced input for the INTERCOM microphone on/off (ON is selected when MIC SEL is set to CARBON).
		INTER SIDE TONE	**50** to 99	Sets the level of the INTERCOM sidetone.

a) The setting of this item is overridden by the setting of Other BEFORE END when TYPE DETECTION in the BATTERY 2 page is set to “OTHER”.

b) The setting of this item is overridden by the setting of Other END when TYPE DETECTION in the BATTERY 2 page is set to “OTHER”.

c) When TYPE DETECTION in the BATTERY 2 page is set to “AUTO”, any batteries other than Sony BP-series batteries and Anton Bauer intelligent battery systems are classified as “Others”.

d) Flashes once per second when the battery status is “BEFORE END”, and flashes 4 times per second when the battery status is “END”.

e) A setting for this item is required when AU CH34 AGC MODE in the AUDIO-2 page is set to OFF.

f) A setting for this item is required when the DWR-S02DN Digital Wireless Receiver is installed.

g) SDI OUT 1 SELECT or SDI OUT 2 SELECT in the OUTPUT 1 page of the OPERATION menu must be set to HDSDI.

h) Pixel noise is reduced to some extent by automatic black balance adjustment *(see page 53)*, but the detection capabilities of that function are limited. For the most effective correction, execute the APR function.
If “No More White Pixel” appears after the APR function is executed, then there are no more detectable white flecks.

FILE menu

No.	Page	Item	Settings	Description
01	USER FILE	USER FILE LOAD	EXEC	*For details, see “Saving and Recalling User Files” (page 219).*
		USER FILE SAVE	EXEC	
		F.ID	**Blank**/up to 16 characters	
		USER PRESET	EXEC	*For details, see “Resetting USER menu settings to the standard settings” (page 199).*

No.	Page	Item	Settings	Description
02	USER FILE 2	STORE USR PRESET	EXEC	Save settings for items on pages registered in the USER menu as the standard settings.
		CLEAR USR PRESET	EXEC	Clear the standard setting of pages registered in the USER menu.
		CUSTOMIZE RESET	EXEC	Return the pages registered in the USER menu to the factory default state.
		LOAD CUSTOM DATA	**OFF**/ON	Selects whether to load page and item customization data when USER FILE LOAD on the USER FILE page is executed.
		LOAD OUT OF USER	**OFF**/ON	Selects whether to load USER FILE data for items other than the current USER menu items when USER FILE LOAD on the USER FILE page is executed.
		BEFORE FILE PAGE	**OFF**/ON	Selects whether to load data for items on the pages beyond USER FILE in the USER menu when USER FILE LOAD on the USER FILE page is executed.
		USER LOAD WHITE	**OFF**/ON	Selects whether to load white balance data when USER FILE LOAD on the USER FILE page is executed.
03	ALL FILE	ALL FILE LOAD	EXEC	Load ALL file.
		ALL FILE SAVE	EXEC	Save ALL file.
		F.ID	**Blank**/up to 16 characters	Name ALL file.
		ALL PRESET	EXEC	Return all items to preset values.
		STORE ALL PRESET	EXEC	Save the current settings of all items as preset values.
		CLEAR ALL PRESET	EXEC	Clear the preset values of all items.
		3SEC CLR PRESET	**OFF**/ON	Turns the following function on and off: When the CANCEL/PRST/ESCAPE switch is held on the CANCEL/PRST side for three seconds, clear the preset values of each item.
		NETWORK DATA	**OFF**/ON	Selects whether or not to read in the network-related data.

No.	Page	Item	Settings	Description
04	SCENE FILE	1	STANDARD	*For details, see "Saving and Loading Scene Files" (page 222).*
		2	STANDARD	
		3	STANDARD	
		4	STANDARD	
		5	STANDARD	
		STANDARD	–	
		SCENE RECALL	EXEC	
		SCENE STORE	EXEC	
		F.ID	STANDARD	
05	REFERENCE	REFERENCE STORE	EXEC	Save reference file saved on the USB flash drive in internal memory.
		REFERENCE CLEAR	EXEC	Clear reference file.
		REFERENCE LOAD	EXEC	Load reference file.
		REFERENCE SAVE	EXEC	Save reference file on the USB flash drive.
		F.ID	**Blank**/up to 16 characters	Enter reference file name.
		SCENE WHITE DATA	**OFF**/ON	Selects whether to load white balance data when SCENE RECALL or STANDARD on the SCENE FILE page is executed.
06	USER GAMMA	USER GAMMA LOAD	EXEC	Loads user-created gamma table data (a user gamma file) from a USB flash drive into internal memory.
		USER GAMMA RESET	EXEC	Clears a user gamma file from internal memory.
		F.ID	—	Displays the name of the user gamma file in internal memory.
		DATE	—	Displays the date and time of creation of a user gamma file on a USB flash drive.

No.	Page	Item	Settings	Description
07	LENS FILE 1	LENS FILE RECALL	EXEC	Load lens file.
		LENS FILE STORE	EXEC	Save lens file.
		F.ID	**No Offset**/up to 16 characters	Sets the name of the last selected lens file.
		SOURCE	MEMORY1	Displays the number of last loaded lens file.
		LENS NO OFFSET	EXEC	Clear lens file.
		LENS AUTO RECALL	**OFF**/ON/S.No	Specifies whether to automatically load the lens file of a lens that supports serial communications. **OFF:** Do not use the lens file function. **ON:** Load the lens file corresponding to the lens model name, and reflect the contents of the file. **S.No:** If the lens can communicate its serial number, load the lens file corresponding to the lens model name and serial number, and reflect the contents of the file. If the lens serial number cannot be communicated, load the lens file corresponding to the lens model name (same as the ON setting).
		L.ID	—	Display the name of the connected lens that supports serial communications.
		L.MF	—	Display the manufacturer of the connected lens that supports serial communications.
08	LENS FILE 2	LENS M VMOD [a)]	(–99 to 99)	Adjusts the lens file V SAW shading compensation.
		LENS CENTER H [a)]	–480 to **0** to 479	Compensates the horizontal position of lens file center marker.
		LENS CENTER V [a)]	–270 to **0** to 269	Compensates the vertical position of lens file center marker.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.
		LENS R FLARE [a)]	(–99 to 99)	Adjusts the lens file flare (R).
		LENS G FLARE [a)]	(–99 to 99)	Adjusts the lens file flare (G).
		LENS B FLARE [a)]	(–99 to 99)	Adjusts the lens file flare (B).
		LENS W-R OFST [a)]	(–99 to 99)	Adjusts the white balance (R) compensation value of the lens file.
		LENS W-B OFST [a)]	(–99 to 99)	Adjusts the white balance (B) compensation value of the lens file.

No.	Page	Item	Settings	Description
09	LENS FILE 3	SHADING CH SEL	**R**/G/B/TEST	Selects the channel adjusted by this menu. If TEST is selected, the setting is linked to the setting of TEST OUT SELECT.
		TEST OUT SELECT	**VBS**/Y/R/G/B	Selects the signal output of the TEST OUT connector.
		LENS R/G/B H SAW [a)]	(–99 to 99)	Adjusts the H Saw white shading compensation.
		LENS R/G/B H PARA [a)]	(–99 to 99)	Adjusts the H Parabola white shading compensation.
		LENS R/G/B V SAW [a)]	(–99 to 99)	Adjusts the V Saw white shading compensation.
		LENS R/G/B V PARA [a)]	(–99 to 99)	Adjusts the V Parabola white shading compensation.
10	USB MEMORY	USB IN > JUMP TO	**OFF**/USER/ALL/ SCENE/LENS/REFER/ USER1	*For details, see "Jumping to a File-Related Menu Page when Connecting a USB Flash Drive" (page 225).*

a) "EX" is displayed when the extender is on, and "08" is displayed when the shrinker is on.

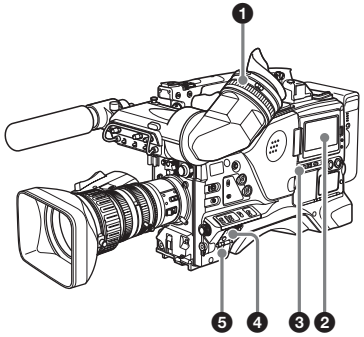
DIAGNOSIS menu

No.	Page	Item	Description
01	HOURS METER	OPERATION	Displays the total time that this unit has been powered on, in units of hours.
		LASER	Displays the total number of output parameters to the optical heads.
		OPERATION (rst)	Displays the total time that this unit has been powered on, in units of hours (reset possible).
		SPINDLE (rst)	Displays the total time that the spindle has been rotating, in units of hours (reset possible).
		LOADING (rst)	Displays the number of times that discs have been loaded (reset possible).
		SEEK (rst)	Displays the total seek time by the optical heads, in units of hours (reset possible).
02	TIME/DATE	ADJUST	*For details, see "Setting the Date/Time of the Internal Clock" (page 38).*
		GPS ADJUST	
		HOUR	
		MIN	
		SEC	
		YEAR	
		MONTH	
		DAY	

No.	Page	Item	Description
03	ROM VERSION 1	PACKAGE: X.XX	Displays ROM version.
		SY1: X.XX	
		SY2K: X.XX	
		SY2U: X.XX	
		DRV: X.XX	
		AT: X.XX	
		FP: X.XX	
04	ROM VERSION 2	LVIS: X.XX	
		TSYS: X.XX	
		TMBP: X.XX	
		CHRN: X.XX	
		BRDG: X.XX	
		PIER: X.XX	
		CAVA: X.XX	
05	ROM VERSION 3	DSP0: X.XX	
		PRXA: X.XX	
		GPS: X.XX	
06	DEV STATUS	I/O: FP, CN, DCP, VF	Displays the status of each internal device of this unit.
		D/A: DCP1, DCP2	
		EEPROM: CN, DCP, DR	
		FRAM: AT	
		FAN: MB	
		LSI: DCP1, DCP2, TG	
		SCI: SY, RM	
07	CA STATUS (CA-FB70 Camera Adaptor only)	CA: CA-FB70	Displays the version information and signal level of the camera adaptor.
		SERIAL: XXXXXXXX	
		VER: VX.XXXXXX APR/30/2014 COMMENTXXXXX XXXX	
		OPTICAL LEVEL	
		CCU → CAM: NOSIGNAL	
		CAM → CCU: NOSIGNAL	
07	CA STATUS (CA-TX70 Camera Adaptor only)	CA: CA-TX70	Displays the version information of the camera adaptor.
		SERIAL: XXXXXXXX	
		VER: VX.XXXXXX APR/30/2014 COMMENTXXXXX XXXX	

Menu Operations

Displaying menus



❶ Viewfinder
❷ LCD monitor
❸ DISP SEL/EXPAND button
❹ MENU ON/OFF switch
❺ POWER switch

To use the MENU ON/OFF switch, open the cover of the menu operating section.
When the camcorder is powered on, set the MENU ON/OFF switch to ON to display the menu on the viewfinder screen and the LCD monitor.
If this is the first time the menu has been used after the camcorder has been powered on, the USER menu is displayed. If the menu has been used before, the last accessed page appears.

When the menu is not displayed on the LCD monitor

Press the DISP SEL/EXPAND button below the LCD monitor to select the CHAR display.

To clear the menu display from the screen

Set the MENU ON/OFF switch to OFF. (When the cover of the menu operating section is closed, this switch is automatically set to OFF.)
When the DISPLAY of the DISPLAY/ASPECT switch on the viewfinder is set to on, the display indicating the current status of the camcorder appears on the viewfinder screen.

For details, see "Selecting the display items" (page 200).

To display the TOP menu

With no menu displayed on the screen, hold down the MENU knob and set the MENU ON/OFF switch to ON.

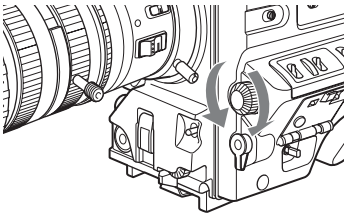
Depending on the internal switch settings, display of the TOP menu may be disabled. For details, refer to the Maintenance Manual.

Basic menu operations

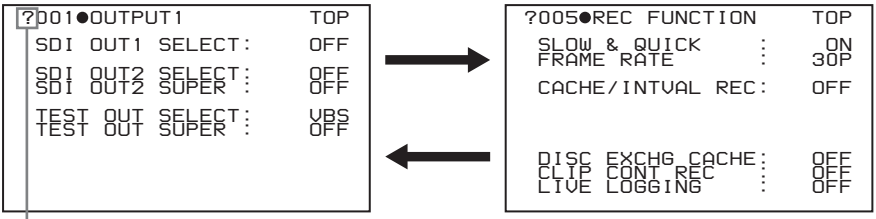
By pressing and turning the MENU knob, you can set various menu items. In the remainder of this section, the LCD monitor is generally shown as an example of the menu display, but a similar display also appears on the viewfinder screen.

To select the setting items and values on the menu

Turn the MENU knob to select in the cases explained below.

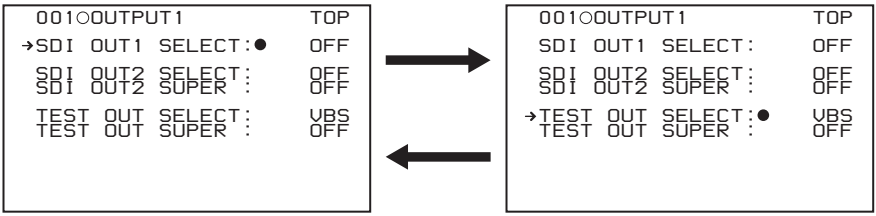


To scroll pages


?001●OUTPUT1 TOP
SDI OUT1 SELECT: OFF
SDI OUT2 SELECT: OFF
SDI OUT2 SUPER : OFF
TEST OUT SELECT: VBS
TEST OUT SUPER : OFF
?005●REC FUNCTION TOP
SLOW & QUICK : ON
FRAME RATE : 30P
CACHE/INTVAL REC: OFF
DISC EXCHG CACHE: OFF
CLIP CONT REC : OFF
LIVE LOGGING : OFF

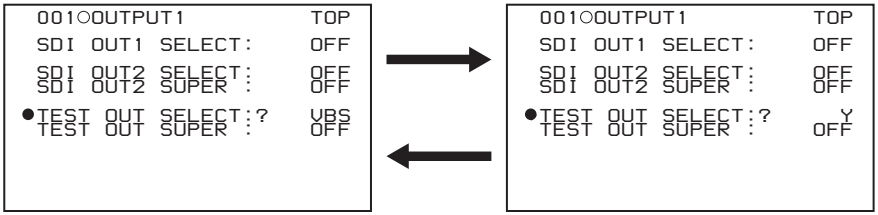
When ? blinks, turn the MENU knob to switch pages.

To select a menu or setting item


001○OUTPUT1 TOP
→SDI OUT1 SELECT:● OFF
SDI OUT2 SELECT: OFF
SDI OUT2 SUPER : OFF
TEST OUT SELECT: VBS
TEST OUT SUPER : OFF
001○OUTPUT1 TOP
SDI OUT1 SELECT: OFF
SDI OUT2 SELECT: OFF
SDI OUT2 SUPER : OFF
→TEST OUT SELECT:● VBS
TEST OUT SUPER : OFF

When ➡ appears, turn the MENU knob to move ➡ up and down.

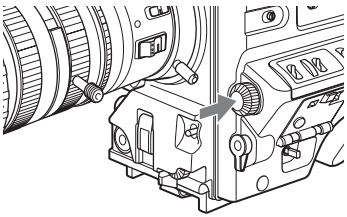
To change a setting value


001○OUTPUT1 TOP
SDI OUT1 SELECT: OFF
SDI OUT2 SELECT: OFF
SDI OUT2 SUPER : OFF
●TEST OUT SELECT:? VBS
TEST OUT SUPER : OFF
001○OUTPUT1 TOP
SDI OUT1 SELECT: OFF
SDI OUT2 SELECT: OFF
SDI OUT2 SUPER : OFF
●TEST OUT SELECT:? Y
TEST OUT SUPER : OFF

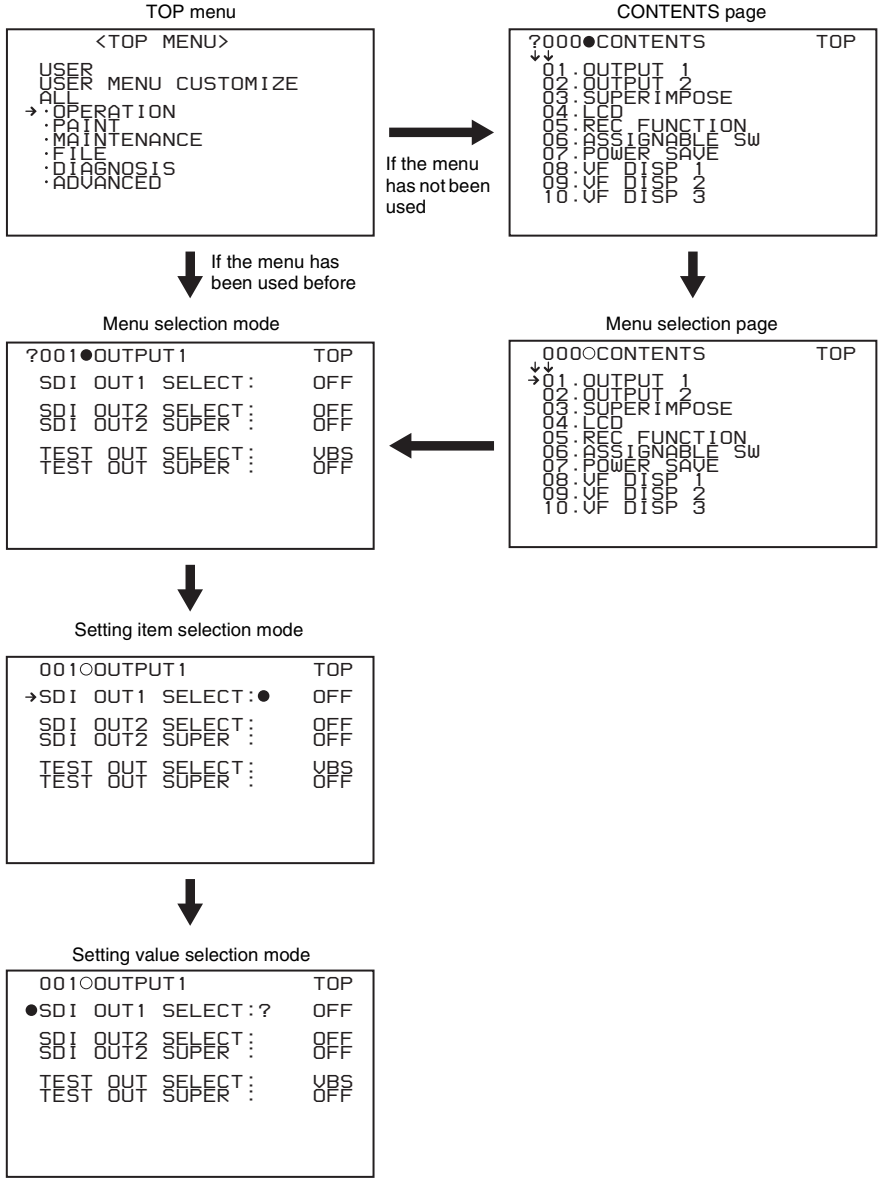
When ? blinks, turn the MENU knob to change the setting (ON/OFF, value, etc.).

To confirm the selection of a menu, a setting item, or a setting value

Each time you press the MENU knob, the menu display switches in the following sequence.



Example: When using the OPERATION menu



Note

If the TOP menu has not been displayed since the camcorder is powered on, “TOP” does not appear at the upper right on the above screen, and you cannot go to the TOP menu. In this case, follow the procedure in “To display the TOP menu” *(page 192)*.

To display the TOP menu when another menu is displayed

Move ➧ to "TOP" displayed at the top right of each page of the menu, and press the MENU knob. Or flick the CANCEL/PRST/ESCAPE switch repeatedly to ESCAPE until the TOP menu is displayed.

Using the USER menu (example menu operation)

This section explains menu operations using the USER menu as an example. The operations are the same for the ALL, OPERATION, PAINT, MAINTENANCE, and DIAGNOSIS menus.

For details about how to operate the USER MENU CUSTOMIZE menu, see "Editing the USER menu" (page 196).

1 Set the MENU ON/OFF switch to ON.

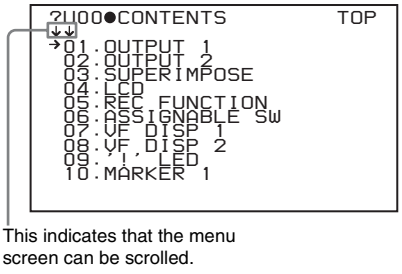
Normally, the USER menu appears.

If it does not, turn the MENU knob to move ➧ to USER in the TOP menu, and press the MENU knob.

If the USER menu has been used before, the last accessed page appears. In this case, go to step **2**.

If this is the first time the USER menu has been displayed, the CONTENTS page of the USER menu appears. In this case, follow the procedure below.

① Press the MENU knob. Then turn the MENU knob to move ➧ to the desired page number.

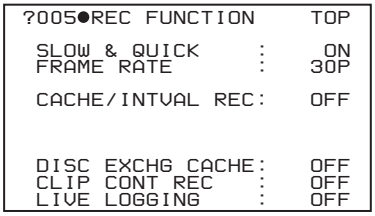


② Press the MENU knob again.

The page selected in ① is displayed. Go to step **3**.

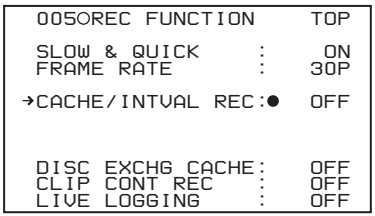
When you set items on the ALL, OPERATION, PAINT, MAINTENANCE, FILE, and DIAGNOSIS menus, move ➧ to the menu that contains the desired item in the TOP menu, and then press the MENU knob.

2 Turn the MENU knob until the desired page appears.


?005●REC FUNCTION TOP
SLOW & QUICK : ON
FRAME RATE : 30P
CACHE/INTVAL REC: OFF
DISC EXCHG CACHE: OFF
CLIP CONT REC : OFF
LIVE LOGGING : OFF

3 Press the MENU knob.

➧ and ● appear.


005○REC FUNCTION TOP
SLOW & QUICK : ON
FRAME RATE : 30P
→CACHE/INTVAL REC:● OFF
DISC EXCHG CACHE: OFF
CLIP CONT REC : OFF
LIVE LOGGING : OFF

4 Turn the MENU knob to move ➧ to the desired item, and then press the MENU knob.

➧ changes to ●, and ● changes to ?.

5 Turn the MENU knob to change the setting.

Depending on the direction of turning the knob, the setting value increases, decreases, switches between ON and OFF, and so on.

To interrupt changing the settings

Set the MENU ON/OFF switch to OFF. By setting the MENU ON/OFF switch to ON again, the values that were displayed when you interrupted the setting operations will reappear so you can continue making settings.

6 Press the MENU knob.

● changes to ➧, and ? changes to ●. The selection is confirmed.

7 To continue setting other items on the same page, repeat steps from 4 to 6.

8 To end the menu operation, set the MENU ON/OFF switch to OFF.
The menu disappears from the screen, and the display indicating the current status of the camcorder appears along the top and bottom of the screen.

To cancel a change or return to the standard settings

Note

Depending on the setting item, in some cases only the function to return to the standard setting is valid.

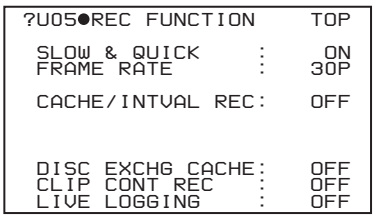
1 Before pressing the MENU knob in step 6 of the above procedure, flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position.
The message "CANCEL DATA OK?" appears.

2 Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position again.
The message "CANCEL DATA" appears to indicate that the change has been cancelled.

3 To return to the standard settings after pressing the MENU knob in step 6 of the above procedure, flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position.
The message "PRESET DATA OK?" appears on the screen.

4 Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position again.
This returns to the standard settings.

To move to another page


?U05●REC FUNCTION TOP
SLOW & QUICK : ON
FRAME RATE : 30P
CACHE/INTVAL REC: OFF
DISC EXCHG CACHE: OFF
CLIP CONT REC : OFF
LIVE LOGGING : OFF

When ? appears in front of the page number
Turn the MENU knob to switch pages.

When nothing appears in front of the page number
Turn the MENU knob to move ➧ to the page number, and press the MENU knob. Then turn the MENU knob to switch pages.

Editing the USER menu

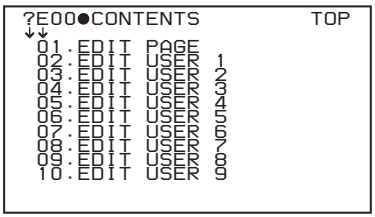
The USER MENU CUSTOMIZE menu allows you to configure a USER menu that consists only of pages and items that you need by adding, deleting or replacing the pages.

To add a new page

The USER MENU CUSTOMIZE menu allows you to add a new page to the USER menu.
While the EDIT page contains factory-preset items, the EDIT USER 1 to EDIT USER 19 pages are all blank in their initial state. You can register up to 10 items, including blank lines, on each of these pages.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

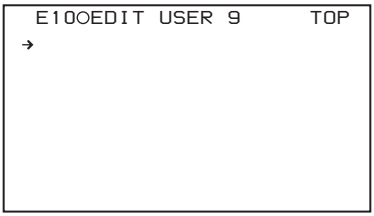
1 Display the TOP menu *(see page 192)*.

2 Select USER MENU CUSTOMIZE, and press the MENU knob.
If this is the first time the USER MENU CUSTOMIZE menu has been displayed, the CONTENTS page of the menu appears.

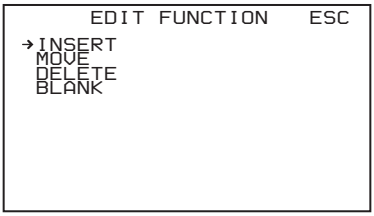


3 If the CONTENTS page is displayed, press the MENU knob. Then select one of EDIT USER 1 to EDIT USER 19, and press the MENU knob.
If a different page other than the CONTENTS page is displayed, turn the MENU knob until the desired page appears, then press the MENU knob.

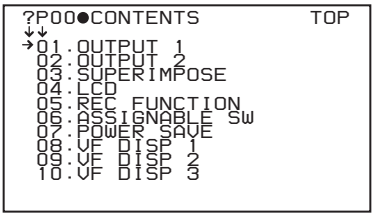
Example: when the EDIT USER 9 page is selected



4 Press the MENU knob. Then select the line where you want to add an item, and press the MENU knob.
The EDIT FUNCTION page appears.



5 Select INSERT, and press the MENU knob.
The following menu appears.



6 Add the items as follows.

① Press the MENU knob, scroll the page until the desired item appears, and then press the MENU knob again.
② Press the MENU knob again, select the desired item, and then press the MENU knob.

The EDIT USER 9 page appears again, displaying the newly added item.

7 Repeat steps 4 to 6 to add the remaining items.
You can add up to ten items on one page.

To delete items from a page by using the CANCEL/PRST/ESCAPE switch

1 Follow steps 1 to 3 in "To add a new page" *(page 196)*.

2 Press the MENU knob. Then select the item that you want to delete.

3 Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position.
The message "DELETE ITEM OK?" appears.

4 Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position again.

To delete items from a page by using the menu

1 Follow steps 1 to 3 in "To add a new page" *(page 196)*.

2 Press the MENU knob. Then select the item that you want to delete, and press the MENU knob.
The EDIT FUNCTION page appears.

3 Select DELETE, and press the MENU knob.
The previously displayed page appears again, and the message "DELETE OK? YES ➧ NO" appears.

4 Select YES, and press the MENU knob.

To replace items on a page

1 Follow steps 1 to 3 in "To add a new page" *(page 196)*.

2 Press the MENU knob. Then select the item that you want to replace, and press the MENU knob.
The EDIT FUNCTION page appears.

3 Select MOVE, and press the MENU knob.
The previously displayed page appears again.

4 Select the position to which you want to move the item, and press the MENU knob.

The item selected in step **2** moves to the position that you selected in step **4**.

To insert a blank line

1 **Follow steps 1 to 3 in "To add a new page" *(page 196)*.**

2 **Press the MENU knob. Then select the item that you want to replace, and press the MENU knob.**
The EDIT FUNCTION page appears.

3 **Select BLANK, and press the MENU knob.**
The previously displayed page appears again, and a blank line is inserted above the specified item.

Note

You cannot insert a blank line on a page where 10 items have already been registered.

To add/delete/replace pages

You can add a new page to the USER menu, delete a page from the USER menu, or replace pages, using the EDIT PAGE of the USER MENU CUSTOMIZE menu.

To add a page

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 **Display the TOP menu *(see page 192)*.**

2 **Select USER MENU CUSTOMIZE, and press the MENU knob.**
If this is the first time the USER MENU CUSTOMIZE menu has been displayed, the CONTENTS page appears.
If the menu has been used before, the last accessed page appears.

3 **If the CONTENTS page is displayed, press the MENU knob. Then select EDIT PAGE, and press the MENU knob.**
If a different page is displayed, turn the MENU knob until the EDIT PAGE screen appears.

```
?E01●EDIT PAGE          TOP
↓↓
 01.OUTPUT 1
 02.OUTPUT 2
 03.SUPERIMPOSE
 04.LCD
 05.REC FUNCTION
 06.ASSIGNABLE SW
 07.VF DISP 1
 08.VF DISP 2
 09.  LED
 10.MARKER 1
```

4 **Press the MENU knob. Then select the position where you want to add the page, and press the MENU knob.**
The EDIT FUNCTION page appears.

5 **Select INSERT, and press the MENU knob.**
The CONTENTS page appears.

6 **Select the desired page, and press the MENU knob.**
The number and name of the page selected in step **6** is added above the item selected in step **4**.

To cancel adding a page
Before pressing the MENU knob in step **6**, select ESC at the top right of the screen, and press the MENU knob.
The EDIT PAGE screen appears again.

To delete a page by using the CANCEL/PRST/ESCAPE switch

1 **Follow steps 1 to 3 in "To add a page" *(page 198)*.**

2 **Press the MENU knob. Then select the page that you want to delete.**

3 **Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position.**
The message "DELETE PAGE OK?" appears.

4 **Flick the CANCEL/PRST/ESCAPE switch to the CANCEL/PRST position again.**

To delete a page by using the menu

1 **Follow steps 1 to 3 in "To add a page" *(page 198)*.**

2 Press the MENU knob. Then select the page that you want to delete, and press the MENU knob.
The EDIT FUNCTION page appears.

3 Select DELETE, and press the MENU knob.
The previously displayed page appears again, and the message "DELETE OK? YES ➧ NO" appears at the upper right.

4 Select YES, and press the MENU knob.

To replace pages

1 Follow steps 1 to 3 in "To add a page" *(page 198)*.

2 Press the MENU knob. Then select the page that you want to move, and press the MENU knob.
The EDIT FUNCTION page appears.

3 Select MOVE, and press the MENU knob.
The previous screen appears again.

4 Select the position to which you want to move the page, and press the MENU knob.
The page selected in step **2** is moved to the position.

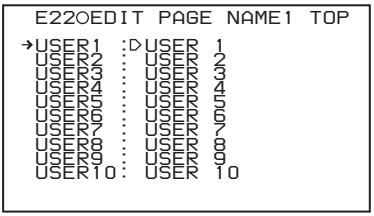
To rename pages

The names of pages (USER 1 to USER 19) created with EDIT USER 1 to EDIT USER 19 can be changed. (The maximum name length is 15 characters.)

Note

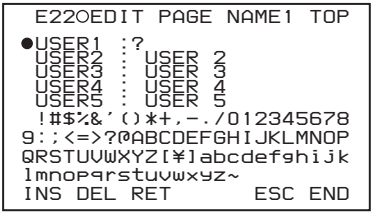
The ASSIGN ITEM SEL page cannot be renamed.

1 Display the EDIT PAGE NAME1 or EDIT PAGE NAME2 of the USER MENU CUSTOMIZE menu.
EDIT PAGE NAME1: To rename USER1 to USER10
EDIT PAGE NAME2: To rename USER11 to USER19



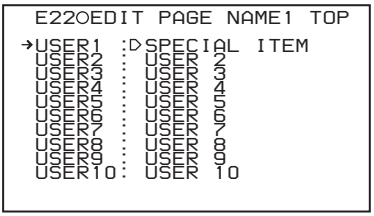
For details on menu operations, see "Basic menu operations" (page 192).

2 Select the page that you want to rename (USER 1 to USER 19), and press the MENU knob.
A character table appears.



3 Follow steps 3 and 4 described in "Setting the shot ID" *(page 205)* to enter characters.

4 When you have finished entering the name, turn the MENU knob to move ■ to END, and press the MENU knob.
The entered name is now displayed.

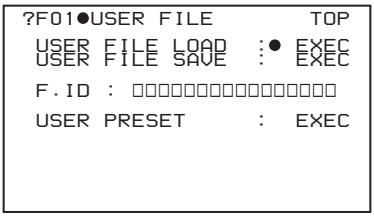


Resetting USER menu settings to the standard settings

You can return all settings in the USER menu to standard settings.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

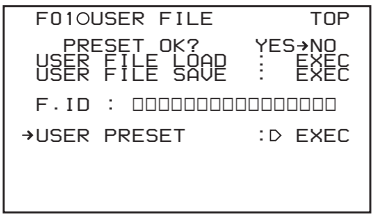
1 Display the USER FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).



2 Press the MENU knob, then select USER PRESET, and press the MENU knob.

The message "PRESET OK? YES ➡ NO" appears.



3 Select YES, and press the MENU knob.

The message "COMPLETE" appears, and the settings for all items in the USER menu are reset to the standard settings.

Setting the Status Display on the Viewfinder Screen and the LCD Monitor

This section explains the menu settings for the display of the viewfinder screen. These settings are also used for the display of the LCD monitor in the same way.

Selecting the display items

To select the items to be displayed on the viewfinder screen (with the viewfinder DISPLAY of the DISPLAY/ASPECT switch set to on) and the LCD monitor, use the VF DISP 1, VF DISP 2, and VF DISP 3 pages of the OPERATION menu.
(How to select an item in the menu screen: Turn the MENU knob to move ➡ to the desired item.)

1 Display the VF DISP 1, VF DISP 2, or VF DISP 3 page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired setting item, and press the MENU knob.

On the VF DISP 1, VF DISP 2, and VF DISP 3 pages, you can select any of the following items to turn its display on or off.

VF DISP 1 page

Item	Description
VF DISP	Turning on or off the viewfinder display [a)]
VF DISPLAY MODE	Selecting the display mode [b)]
DISP EXTENDER	Extender indicator
DISP FILTER	Types of the ND filter
DISP WHITE	White balance memory indicator
DISP GAIN	Gain indicator
DISP SHUTTER	Shutter speed and ECS mode indicator
DISP AUDIO	Audio level indicator

Item	Description
DISP DISC	Remaining disc capacity indicator
DISP IRIS	Iris opening indicator

a) The viewfinder display can be also turned on or off by using the DISPLAY of the DISPLAY/ ASPECT switch on the viewfinder.

b) For detailed information on the display mode, *see "Change confirmation/adjustment progress messages" (page 202).*

VF DISP 2 page

Item	Description
DISP ZOOM	Zoom position indicator
DISP COLOR TEMP	Displays the color temperature.
DISP BATT REMAIN [a)]	Displays the battery voltage/remaining capacity of an internal battery pack or an external battery connected to the DC IN connector.
DISP DC IN	Displayed when the power is supplied from an external battery connected to the DC IN connector.
DISP WRR RF LVL	Displays the reception level of the wireless microphone.
DISP REC FORMAT	Displays the recording format.
DISP CLIP NO(PB)	During playback, displays the clip number and total number of clips.
DISP TIMECODE	Displays the timecode.
DISP ALAC	Aberration correction function display

a) When an Anton Bauer battery system or a BP-GL65A/GL95A/FLX75 battery pack is installed, the remaining battery power is shown as a percentage value (%) according to the setting of this item.

INT: When one of the above batteries is installed, the remaining power is shown as a percentage value (%) when there is a change in the value or when the power is low.

AUTO: The remaining power is shown as a percentage value (%) when one of the above batteries is installed. Otherwise the voltage (VOLT) is displayed continuously.

VOLT: The voltage (VOLT) is displayed continuously.

VF DISP 3 page

Item	Description
DISP CLIP NAME	Selects the type of clip name to display. [a)]
DISP SCENE FILE	Turns on or off the display of the number of the currently loaded scene file.
DISP CONT REC	Turns on or off the Clip Continuous Rec display.
LOW LIGHT	Turns on and off the on-screen warning that the average level of the video has dropped beneath a set level.
LOW LIGHT LEVEL	Sets the LOW LIGHT threshold value.
VF BATT WARNING	Specifies the remaining battery capacity level that starts the flashing warning in the viewfinder.
ABSOLUTE VALUE	Turns on and off the mode that displays numeric menu settings as absolute values. [b)]

a) Displayed clip names are also linked to the settings of "Display Title" and "Planning Clip Name in Clip Info. Area" in the Disc Menu.

b) This makes it possible to display settings that include reference settings, stored with STORE ALL PRESET or other functions, as absolute values.

VF DISP 4 page

Item	Description
DISP GPS	GPS reception status display
WIRELESS STATUS	CBK-WA100 wireless reception status
EXT MEDIA REMAIN	CBK-WA100 SD card remaining media display
SENDING CLIPINFO	Clip transfer to CBK-WA100 progress display
NW CLIENT MODE	CBK-WA100 network client mode status display
STREAMING STATUS	CBK-WA100 streaming status display

3 Turn the MENU knob to select the desired setting (ON, OFF, or value), and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Change confirmation/adjustment progress messages

You can limit or suppress the messages that give details of setting changes and adjustment progress and results by setting a display mode. The conditions under which messages are displayed and their correspondence with the display mode are as follows:

Y: Message is displayed.
N: Message is not displayed.

Message display condition	Message	Display mode setting		
		1	2	3
When the filter selection has been changed	FILTER: n (where n = 1, 2, 3, 4)	N	N	Y
When the gain setting has been changed	GAIN: n (where n = –6dB, –3dB, 0dB, 3dB, 6dB, 9dB, 12dB, 18dB, 24dB, 30dB, 36dB, 42dB)	N	N	Y
When the setting of the WHITE BAL switch has been changed	WHITE: n (where n = A CH, B CH, PRESET) or ATW: RUN	N	N	Y
When the OUTPUT/DCC switch has been set to DCC ON or OFF	DCC: ON (or OFF)	N	Y	Y
When the shutter speed and mode setting has been changed [a)]	:SHUTTER: 1/100 (or 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS)	N	Y	Y
When the black or white balance has been adjusted	E.g. AWB : OK	N	Y	Y

a) This is also displayed for about 3 seconds when the SHUTTER selector is set to ON.

Changing the display mode

1 Display the VF DISP 1 page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select VF DISP MODE, and press the MENU knob.

3 Select the desired display mode, and press the MENU knob.

Setting the marker display

Switch the display of the center and safety zone markers on or off, and select whether the area indicated by the safety zone marker is 80%, 90%, 92.5%, or 95% of the screen area.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the MARKER 1 or MARKER 2 page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.
You can set the following items on the MARKER 1 and MARKER 2 pages.

MARKER 1 page

Item	Description
MARKER	To hide all markers, set to "OFF".
CENTER	To display the center marker, set to "ON".
CENTER MARK	Selects the display mode of the center marker.
SAFETY ZONE	To display the safety zone, set to "ON".
SAFETY AREA	Selects the safety zone range (80%, 90%, 92.5% or 95%).
ASPECT	To display the aspect marker, set to "ON".
ASPECT SELECT	Selects the aspect mode (15:9/14:9/13:9/4:3/1.85/2.35).
ASPECT MASK	To make the areas out of the selected aspect marker dimmer, set to "ON".
ASPECT MASK LVL	To set the mask level, when the ASPECT MASK is set to "ON".
100% MARKER [a)]	To display the effective pixel area, set to "ON".

a) 100% MARKER is disabled when the focus assist indicator is displayed.

Note

The four items ASPECT, ASPECT SELECT, ASPECT MASK, and ASPECT MASK LVL are ignored when the recording format is IMX50/40/30 or DVCAM and the aspect ratio is 4:3.

MARKER 2 page

Item	Description
USER BOX [a)]	Turns the display of the box cursor on and off.
USER BOX WIDTH	Sets the width of the box cursor (distance from center to left or right edge).
USER BOX HEIGHT	Sets the height of the box cursor (distance from center to top or bottom edge).
USER BOX H POS	Sets the horizontal position of the center of the box cursor.
USER BOX V POS	Sets the vertical position of the center of the box cursor.
CENTER H POS	Sets the horizontal position of the center marker.
CENTER V POS	Sets the vertical position of the center marker.
ASPECT SAFE ZONE	Turns the display of the aspect safety zone on and off.
ASPECT SAFE AREA	Selects the range of the aspect safety zone (80%/90%/92.5%/95%).

a) USER BOX is disabled by setting FOCUS AREA MARK to "ON" on the FOCUS ASSIST page of the OPERATION menu.

3 Turn the MENU knob to change the setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Setting the viewfinder

You can make settings for viewfinder screen display functions.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the VF SETTING page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.

You can set the following items on the VF SETTING page.

Item	Description
ZEBRA	Turns the zebra display on or off. [a)]
ZEBRA SELECT	Selects ZEBRA 1, ZEBRA 2 or BOTH.
ZEBRA1 DET LVL	Adjusts the level of the zebra 1 (20% to 70% to 107%) display.
ZEBRA1 APT LVL	Adjusts the aperture level of the zebra 1 display. (1% to 10% to 20%)
ZEBRA2 DET LVL	Adjusts the level of the zebra 2 (52% to 100% to 109%) display.
VF DETAIL LEVEL	Adjusts the sharpness of the viewfinder (–99 to 99).
VF ASPECT (SD)	Specifies whether to set the viewfinder screen and LCD monitor aspect ratio automatically or to set it to 16:9 when the IMX50/40/30 or DVCAM recording format is selected. When "16:9" is selected, then the screen is always displayed as a 16:9 screen (before being cut out to 4:3), even when ASPECT RATIO (SD) is set to "4:3".
VF MARKER LEVEL	Adjusts the VF marker display level (–99 to 0 to 52).

You can set the following items on the VF DETAIL page.

Item	Description
VF DETAIL	Sets VF detail ON/OFF.
VF DETAIL LEVEL	Adjusts the level of the VF detail function (–99 to 99).
CRISP	Adjusts the crispness level.
FREQUENCY	Selects the center frequency of the detail signal.
FAT MODE	Sets FAT (thickens detail edges) mode.
FLICKER	Sets the flicker function.
COLOR DETAIL	Sets the color detail function.
COLOR SEL	Selects the color of the color detail.

Item	Description
PEAK COLOR	Sets the color of the peak color detail.
CHROMA LEVEL	Selects the chroma level of the image.

a) If you are using a viewfinder which is not equipped with a ZEBRA switch, use this item to turn the display on and off. If you are using a viewfinder with a ZEBRA switch, you can turn the display on and off either with the ZEBRA switch or with this menu operation.

3 Turn the MENU knob to change the setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Recording shot data superimposed on the color bars

You can select which shot data is recorded superimposed on the color bars. You can also select which of the shot IDs (1 to 4) set in the SHOT DATA page is recorded superimposed on the picture.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the SHOT DISP page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.
You can set the following items on the SHOT DISP page.

Item	Description
SHOT DATE	Selects whether or not the shot data is superimposed (ON or OFF).
SHOT TIME	Selects whether or not shot time is superimposed (ON or OFF).
SHOT MODEL NAME	Selects whether or not the model name is superimposed (ON or OFF).
SHOT SERIAL NO	Selects whether or not the serial number is superimposed (ON or OFF).
SHOT ID SEL	Selects whether or not the shot ID set on the SHOT ID page is superimposed. a)
SHOT 16:9 CHARA	Turns the following function on and off: When displaying aspect ratio 4:3 video, record superimposed "16:9" in the locations where 16:9 video is cut.
SHOT BLINK CHARA	Selects whether or not the blinking * is superimposed (ON or OFF).

a) To carry out superimposed recording, select the SHOT ID number (1 to 4). Not to carry out superimposed recording, select "OFF".

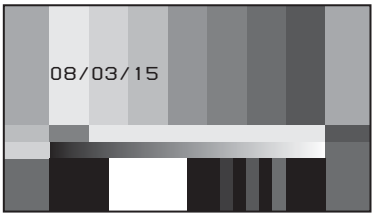
3 Turn the MENU knob to select ON/OFF or the SHOT ID number, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

To carry out superimposed recording

To actually record the items selected for superimposed recording on the SHOT DISP page, set the OUTPUT/DCC switch to BARS, DCC OFF.
The items selected for superimposed recording appear on the screen and are recorded superimposed on the color bars.

Example display: when SHOT DATA is set to ON



Setting the shot ID

You can set a shot ID of up to 12 alphanumeric characters, spaces, and symbols.
When the OUTPUT/DCC switch is set to BARS, DCC OFF, this shot ID is output with the color bar signal. You can set four shot IDs (ID-1 to ID-4).

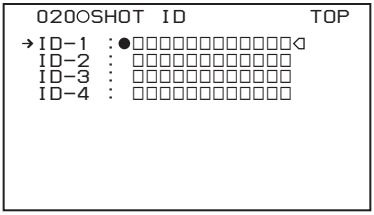
Note

When the menu is displayed, the shot ID is not displayed even if the color bar signal is output.

(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

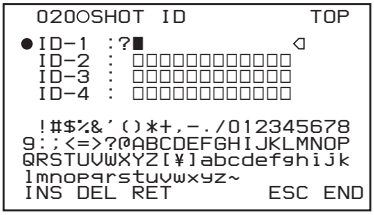
1 Display the SHOT ID page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).



2 Select one of ID-1 to ID-4, and press the MENU knob.

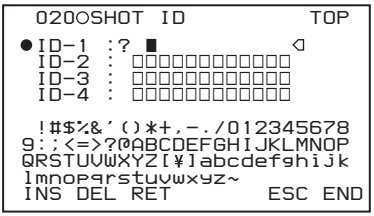
A ■ mark appears over the first character position in the string, and characters can now be input.



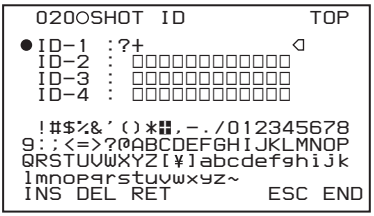
3 Enter or change the shot ID.

When you are entering the whole shot ID, go to ②.

① Turn the MENU knob to move the ■ mark to the character which you want to change, then press the MENU knob.



② Turn the MENU knob until the ■ mark moves to the character position that you want to select, then press the MENU knob.
Example: "+" character



4 Repeat step 3 for each of the remaining characters.

5 When the input is complete, turn the MENU knob to move the ■ mark over END, then press the MENU knob.

This ends the input, and returns to the original SHOT ID page.

To insert a space

In step **3** above, move the ■ mark over INS, and press the MENU knob.
To cancel inserting a space, move the ■ mark over RET, then press the MENU knob.

To delete a character

In step **3** of "Setting the shot ID" *(page 205)*, move the ■ mark over DEL, and press the MENU knob.
This deletes the character under the ■ mark in the shot ID row.
To cancel deleting the character, move the ■ mark over RET, and press the MENU knob.

To cancel changing shot ID

Before executing step **5** of "Setting the shot ID" *(page 205)*, move the ➔ mark over ESC, then press the MENU knob or flick the CANCEL/PRST/ESCAPE switch to ESCAPE.

Displaying the status confirmation screens

You can confirm the settings or status of the camcorder on the LCDs by displaying the following four screen.

ABNORMAL <!> screen
This window allows you to confirm why the ! (warning) indicator lights in the viewfinder. You can use the '!' LED page of the OPERATION menu to set whether or not the ! (warning) indicator lights.

SYSTEM screen
This screen displays information such as the system frequency, the recording format, whether output from the TEST OUT connector is on or off, and the type of output signal.

FUNCTION screen
This screen displays the functions assigned to the ASSIGN switches, ZEBRA ON/OFF, the detection level, and other information.

AUDIO STATUS screen
This screen allows you to confirm the following items related to audio.
- Audio bit rate
- Setting condition of DF/NDF
- Type of front microphone
- Type of input signal to audio channels 1 to 4
- Input level of audio channels 1 to 4

GPS INFORMATION screen
This screen displays the following items related to GPS.
- Latitude
- Longitude
- Altitude
- Position date and time (CALC)
- Real time
- Time zone

You can use the SET STATUS page of the OPERATION menu to set whether or not the status confirmation screens are displayed.

To display the status confirmation screens

You can use the CANCEL/PRST/ESCAPE switch as the STATUS ON/SEL/OFF switch when the MENU ON/OFF switch is set to OFF (when the cover of the menu operating section is closed, OFF is automatically selected).

To disable display of the status confirmation screens

(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the SET STATUS page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.
You can set the following items on the SET STATUS page.

Item	Description
STATUS ABNORMAL	Selects whether or not the ABNORMAL window is displayed (ON or OFF).
STATUS SYSTEM	Displays (ON) or hides (OFF) the SYSTEM menu.
STATUS FUNCTION	Selects whether or not the FUNCTION window is displayed (ON or OFF).
STATUS AUDIO	Selects whether or not the STATUS AUDIO window is displayed (ON or OFF).
STATUS GPS	Selects whether or not the STATUS GPS window is displayed (ON or OFF).

3 Turn the MENU knob to change the setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Adjustments and Settings from Menus

Setting gain values for the GAIN selector positions

You can set the gain values for the L, M, and H positions of the GAIN selector, which switches the gain of the video amplifier.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the GAIN SW page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the item for the switch position, then press the MENU knob.
You can set the following items on the GAIN SW page.

Item	Description
GAIN LOW	Sets the gain value corresponding to the L position of the GAIN selector.
GAIN MID	Sets the gain value corresponding to the M position of the GAIN selector.
GAIN HIGH	Sets the gain value corresponding to the H position of the GAIN selector.
GAIN TURBO	Sets the gain value corresponding to TURBO GAIN function.
TURBO SW IND	**OFF:** After pressing the button assigned with the TURBO GAIN function, the gain value changes when the GAIN selector is operated. **ON:** When the button assigned with the TURBO GAIN function is set to TURBO GAIN, the gain value does not change when the GAIN selector is operated unless the button is pressed again.
SHOCK-LESS GAIN	Turns shockless gain on or off.

3 Turn the MENU knob to select the gain value, and press MENU knob.
Any of –6, –3, 0, 3, 6, 9, 12, 18, 24, 30, 36 or 42 dB can be set for each of the L, M, H, and TURBO positions, in any sequence.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Selecting the output signals

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the OUTPUT 1 page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.
You can set the following items on the OUTPUT 1 page.

Item	Setting
SDI OUT 1 SELECT	Selects the signal output from the SDI OUT1 connector. **OFF:** Do not output video. **HD-SDI:** Output HD-SDI. **SD-SDI:** Output SD-SDI
SDI OUT 2 SELECT	Selects the signal output from the SDI OUT2 connector. **OFF:** Do not output video. **HD-SDI:** Output HD-SDI. **SD-SDI:** Output SD-SDI **VF:** Outputs the same video as in the viewfinder.
SDI OUT 2 SUPER	Selects whether to superimpose (ON) or not superimpose (OFF) text information on the signal output from the SDI OUT2 connector. **Note** Disabled when SDI OUT 2 SELECT is set to VF.

Item	Setting
TEST OUT SELECT	Selects the output signal from the TEST OUT connector. **VBS:** Output composite video signal. When you select VBS, connect to the VIDEO IN connector of your monitor. **Y:** Output HD-Y signal. **R/G/B:** Output HD RGB signal.
TEST OUT SUPER	Selects whether to superimpose (ON) or not superimpose (OFF) text information on the signal output from the TEST OUT connector.

3 Turn the MENU knob to change the setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Settings on decks in order to receive SDI ANC (ancillary data) (PDW-HD1500)

To record camera metadata (including GPS data) superimposed on the HD-SDI signal, together with the audio/video signal, set the VANC RX PARAMETER values in the Maintenance menu to the following values.
Line: 11
DID: 0x43
SDID: 0x05

Assigning functions to ASSIGN switches

You can assign the desired function to any of the ASSIGN switches.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the ASSIGNABLE SW page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

You can assign functions by using the following items.

Item	Description
ASSIGN SW <1>	Assigns the function to ASSIGN 1 (push-type) switch.
ASSIGN SW <2>	Assigns the function to ASSIGN 2 (slide-type) switch.
ASSIGN SW <3>	Assigns the function to ASSIGN 3 (push-type) switch.
ASSIGN SW <4>	Assigns the function to ASSIGN 4 (push-type) switch.
ASSIGN SW <5>	Assigns the function to ASSIGN 5 (push-type) switch.
ASSIGN SW <RET>	Assigns the function to RET button on the lens.

2 Select the desired switch or button, and press the MENU knob.
A selection screen for the selected switch or button appears. You can use these screens to assign one of the following functions.

Functions to be assigned to the ASSIGN 1/ 3/4/5 (push-type) switch or RET button on the lens

Function	Description
OFF	Assigns no function.
FRONT MIC	Assigns the function that switches between stereo and monaural when a stereo microphone is connected.
PICTURE CACHE	Assigns execution of recording in picture cache mode.
SUPER (VFDISP& MENU)	Assigns a mixing switch function that selects mixing or no mixing of superimposed viewfinder and menu text data into the video signals output from the SDI OUT 2 or TEST OUT connector, when SDI OUT 2 SUPER or TEST OUT SUPER on the OUTPUT 1 page of the OPERATION menu are set to ON.
MARKER	Assigns the function that displays or hides all markers. [a)]

Function	Description
RETAKE [b]	Assigns the function that deletes the last recorded clip.
ATW	Assigns the function that turns auto tracing white balance ON and OFF.
RETURN VIDEO HD-Y [c]	Assigns the function that displays in the viewfinder the HD-Y (1080i) signal input to the GENLOCK IN connector. [d]
RETURN VIDEO HDSDI [c] [e]	Assigns the function that displays the HDSDI signal input on the SDI IN connector in the viewfinder [d]
LENS RET	Assigns the functions executed by the RET button on the lens (recording review and so on).
REC SWITCH	Assigns the function that starts and stops recording.
TURBO SWITCH	Assigns the turbo gain function.
ZEBRA	Assigns the zebra pattern display function.
FREEZE MIX	Assigns the function that mixes a still picture (monochrome) and camera video (color) (effective for framing shots).
CC 5600K	Assigns the function that applies an electrical 5600 K filter.
ZOOM TELE/ WIDE [f]	For use with a lens that supports serial communications, assign the ZOOM TELE setting to ASSIGN 3, and the WIDE setting to ASSIGN 4.
ZOOM WIDE/ TELE [f]	For use with a lens that supports serial communications, assign the ZOOM WIDE setting to ASSIGN 3, and the TELE setting to ASSIGN 4.
SHOT MARK1	Assigns the function that records a SHOT MARK 1 essence mark.
SHOT MARK2	Assigns the function that records a SHOT MARK 2 essence mark.

Function	Description
CLIP FLAG OK	Assign the functions that set or clear OK, NG, and KEEP flags during recording or playback.
CLIP FLAG NG	
CLIP FLAG KEEP	
DIGITAL EXTENDER [g]	Assigns the function that electronically magnifies the central part of the picture. (All video output is magnified, including recorded video.) x2, x3, x4, and x2x3x4 are available for selection.
CLIP CONT REC	Assigns the function that turns the Clip Continuous Rec function on and off.
UA01 to UA10 [h]	Assigns the items assigned in the ASSIGN SEL menu.
VF COLOR DETAIL	Assigns the VF color detail function.
PLAY & SDI REC S/S	Assigns the REC trigger signal output function, during playback, to the recorder connected to the SDI OUT connector.

a) Even when the MARKER item is set to OFF on the MARKER page of the USER menu, the ASSIGN 1/3/4 switches allow you to display or not to display all markers.

b) This function cannot be assigned to the RET button on the lens.

c) RETURN1 to 4 are displayed when an optional CA-FB70/CA-TX70 Camera Adaptor is connected.

d) Even if the RETURN VIDEO item is set to OFF on the ASSIGNABLE SW page of the OPERATION menu, you can use this switch to display the image of the return video signal on the viewfinder.

e) Does not function when the system frequency of the unit is set to 23.98P.

f) Only the Assign 3 SEL and Assign 4 SEL screens appear.

g) Video momentarily becomes black and audio is momentarily muted when the digital extender is switched on and off.

h) This does not appear if nothing is assigned in the Assign menu.

Functions to be assigned to the ASSIGN 2 (slide-type) switch

Function	Content
OFF	Assigns no function.
FRONT MIC	Assigns the function that switches between stereo and monaural when a stereo microphone is connected.
PICTURE CACHE	Assigns execution of recording in picture cache mode.
SUPER (VFDISP&MENU)	Assigns a mixing switch function that selects mixing or no mixing of superimposed viewfinder and menu text data into the video signals output from the SDI OUT 2 or TEST OUT connector, when SDI OUT 2 SUPER or TEST OUT SUPER on the OUTPUT 1 page of the OPERATION menu are set to ON.
MARKER	Assigns the function that displays or hides all markers. a)
REC VIDEO SOURCE	Switches the recording target video between the video shot by the camera and the video input from an external device (VBS or SD-SDI/HD-SDI).
ZEBRA	Assigns the zebra pattern display function.
FREEZE MIX	Assigns the function that mixes a still picture (monochrome) and camera video (color) (effective for framing shots).
DIGITAL EXTENDER b)	Assigns the function that electronically magnifies the central part of the picture. (All video output is magnified, including recorded video.) x2, x3, and x4 are available for selection.
CLIP CONT REC	Assigns the function that turns the Clip Continuous Rec function on and off.
UA01 to UA10 c)	Assigns the items assigned in the ASSIGN SEL menu.
VF COLOR DETAIL	Assigns the VF color detail function.

a) Even when the MARKER item is set to OFF on the MARKER page of the USER menu, the ASSIGN 2 switch allows you to display or not to display all markers.

b) Video momentarily becomes black and audio is momentarily muted when the digital extender is switched on and off.

c) This does not appear if nothing is assigned in the Assign menu.

Note

For functions that are assigned to the ASSIGN 2 (slide-type) switch, you cannot change those settings using other menus. The function assigned to the ASSIGN 2 switch takes precedence over the menu setting.

3 Select the desired function, and press the MENU knob.

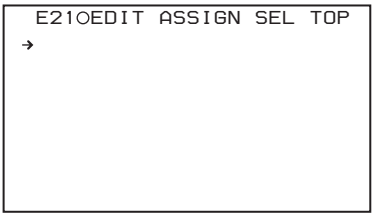
The function is assigned, and the ASSIGNABLE SW page appears again.

To add functions that can be assigned to the ASSIGN switches

When shipped from the factory, UA01 to UA10 user-assignable items in the ASSIGN switch function list are blank.
You can register up to ten functions in these items.

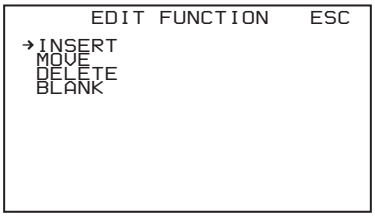
1 Display the EDIT ASSIGN SEL page of the USER MENU CUSTOMIZE menu, and press the MENU knob.

For details about using the menus, see "Menu Operations" (page 192).

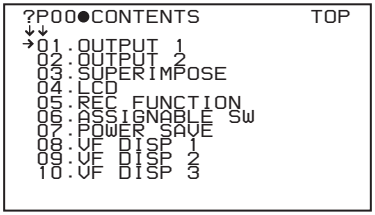


2 Move the ➔ cursor to the item to set using the MENU knob, and press the MENU knob.

The EDIT FUNCTION page appears.



3 Select INSERT, and press the MENU knob.



4 Add an item as follows.

① Press the MENU knob, scroll the page until the desired page appears, and then press the MENU knob.

② Press the MENU knob again, select the desired item, and then press the MENU knob.

The EDIT ASSIGN SEL page appears again, displaying the added item.

5 Repeat steps 2 to 4 to add the remaining items.

You can register up to ten items.

Operation of the ASSIGN 1/2/3/4 switches when UA01 to UA10 are assigned

When an on/off switchable function (or menu item) is assigned to one of the ASSIGN 1/2/3/4 switches, each time the switch is pressed toggles the function on or off.

When another type of menu item is assigned, pressing the switch displays the item and its setting value on the viewfinder screen.

You can then change the setting by pressing and turning the MENU knob.

The viewfinder screen display disappears approximately three seconds after the last operation.

Setting power saving functions

You can limit the function of some output connectors to save power consumption.

(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the POWER SAVE page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.

You can set the following items on the POWER SAVE page.

Item	Description
ETHERNET/ USB	Enables or disables the network connector and USB connector.
REC AUDIO OUT	Puts the AUDIO OUT connectors in EE or SAVE mode.
TEST OUT SAVE	Switches the TEST OUT connector power saving function on and off. **ON:** No signals are output if a cable is not connected. **OFF:** Signals are always output, regardless of whether a cable is connected.
Wi-Fi	Enables or disables the wireless LAN function.

a) The unit must be powered off and on again to enable changes to this setting.

3 Turn the MENU knob to select the desired setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Setting up a wireless LAN

You can install the optional CBK-WA01 Wi-Fi Adaptor in this unit, and set up a wireless LAN as explained in this section.

When you connect this unit to a computer over a network, you can make the settings explained here from a Web menu. For details, refer to the operation manual supplied with the optional CBK-WA01 Wi-Fi Adaptor.

You can also use a LAN connection between a computer and the camcorder using an optional CBK-WA100 Wireless Adaptor.

For details about attachment and operation, refer to the CBK-WA100 operation manual.

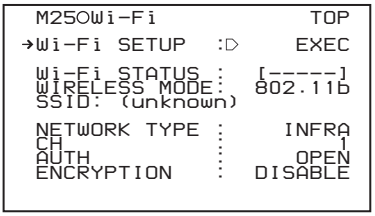
Notes

- For information about connecting to a wireless LAN, refer to the operation manual supplied with the optional CBK-WA01 Wi-Fi Adaptor.
- Even when the optional CBK-WA01 Wi-Fi Adaptor is installed in this unit, the message "NO Wi-Fi ADAPTER!" may appear if you attempt to set up a wireless LAN immediately after powering the unit on. If this occurs, wait for a while and try again.
- If the message "IEEE802.1X IS ENABLED!" appears when you change the settings, execute NET CFG RESET on the NETWORK 2 page of the MAINTENANCE menu and then try again.
- The proxy data recording function is disabled automatically whenever you enable the wireless LAN connection function.

If using the CBK-WA100, the following menu settings are not required.
Before starting, set ETHERNET/USB and Wi-Fi on the POWER SAVE page of the OPERATION menu to "ENABL".
(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

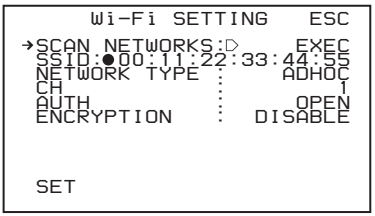
1 Display the Wi-Fi page of the MAINTENANCE menu, and then press the MENU knob.

See "Basic menu operations" (page 192) for more information about menu operations.



2 Select "Wi-Fi SETUP" and then press the MENU knob.

The screen changes to the Wi-Fi SETTING page.

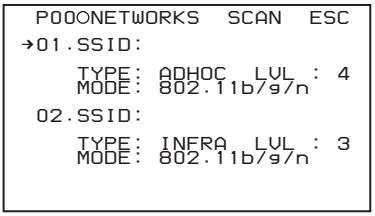


3 Specify the connection destination *(see the next section for how to specify it)*.

To specify a connection destination by automatic detection

1 On the Wi-Fi SETTING page, select "SCAN NETWORKS" and then press the MENU knob.

The screen changes to the NETWORKS page, and automatic detection of the connection destination starts.
Several minutes may be required for network detection.



This page displays the following network items.

Item	Description
SSID	Network name
TYPE	Network connection mode **INFRA:** Infrastructure mode **ADHOC:** Ad hoc mode
LVL	Signal strength 0 (minimum) to 4 (maximum)
MODE	IEEE 802.11 standard

2 Select the desired access point or computer from the detected items, and then press the MENU knob.

You return to the Wi-Fi SETTING page. Check the various setting items.

To return to the Wi-Fi SETTING page

If you do not want to specify a connection destination on this page, or if no connection destination was detected, select "ESC" and then press the MENU knob to return to the Wi-Fi SETTING page.

To use the Wi-Fi remote control

When using a Wi-Fi connection, you can access the Wi-Fi remote control built into the camcorder from a Wi-Fi connected device, such as a smartphone or tablet.

You can control the camcorder remotely using the Wi-Fi remote control. You can start/stop recording, and adjust the iris, zoom, and other settings using the remote control. This function is useful when the camcorder is mounted in a remote location, such as on a crane.

Notes

- Some serial lenses cannot be controlled using the Wi-Fi remote control. When a lens that cannot be operated using the Wi-Fi remote control is attached, the iris and zoom settings are displayed as "0" on the Wi-Fi remote control, even when you try to adjust the values from the Wi-Fi remote control.
- When a lens that can be controlled using the Wi-Fi remote control is attached to the camcorder, the zoom cannot be adjusted if the zoom servo function is disabled on the lens.
- When a remote control device is connected to the REMOTE connector of the camcorder and the white balance memory on the camcorder is set to other than "A (memory A)," turning the Wi-Fi remote control on/off may change the color.
- When a remote control device is connected to the REMOTE connector of the camcorder, that device has priority and the camcorder cannot be controlled using the Wi-Fi remote control.

To display the Wi-Fi remote control on the camcorder

1 Set Wi-Fi to "ENABL" on the POWER SAVE page of the OPERATION menu.

2 Set Wi-Fi/ETHER RM to "RM" on the CAM CONFIG 3 page of the MAINTENANCE menu.

To configure the remote device

Configure the following on the smartphone, tablet, or other device.

1 Connect the camcorder and the device using Wi-Fi.

2 Launch a browser on the device, and access "http://<IP address of camcorder (MAINTENANCE >Network Setting >IP Address value)/rm.html."

For example, enter "http://192.168.1.10/rm.html" if the IP address is 192.168.1.10. When the connection is successful, the Wi-Fi Remote screen appears on the device.

Thereafter, operate the camcorder using the screen displayed on the device.

You can disable operation of the REC button by dragging the Lock bar to the right.

Notes

- To display the page for a smartphone, change "rm.html" to "rms.html" in the URL. To display the page for a tablet, change "rm.html" to "rmt.html" in the URL. When "rm.html" is entered, the page automatically switches for display on the corresponding device. However, the appropriate page may not be displayed, depending on the device.
- The Wi-Fi Remote screen may not match the settings on the camcorder under the following circumstances. If this occurs, reload the browser window.
  - If the camcorder is restarted while connected
  - If the camcorder is operated directly while connected
  - If the device has been reconnected
  - If the browser Forward/Back buttons have been used
- The Wi-Fi Remote control may not function if the wireless signal strength becomes weak.
- The smartphone or table device used may not support ad-hoc mode, depending on the device. For details, refer to the operating instructions provided with the smartphone or tablet device.

- If using the Wi-Fi remote control via the CBK-WA100 Wireless Adaptor, turn the camcorder on first and then turn on the CBK-WA100.

Compatible devices

The supported devices, OS, and browsers that can be used to operate the Wi-Fi remote control are shown in the following table.

Device	OS	Browser
PC	Windows 7	Internet Explorer 8 or 9
Mac OS	10.7.4	Safari 5.1.6
Smartphone	Android 2.3.3	Standard browser
	iOS 5.1.1	Safari
Tablet	Android 4.0.3	Standard browser
	iOS 5.1.1	Safari

To specify a connection destination manually

Specify the following items on the Wi-Fi SETTING page.

Item name	Setting
SSID (network name)	Up to 32 alphanumeric characters or symbols
NETWORK TYPE (connection mode)	**INFRA:** Infrastructure mode **ADHOC:** Ad hoc mode
CH (wireless channel)	1 to 11 (can be specified only in ad hoc mode)
AUTH (network authentication)	**OPEN:** Open system authentication **SHARED:** Shared key authentication **WPA:** WPA (Wi-Fi Protected Access) authentication **WPA2:** WPA2 (Wi-Fi Protected Access 2) authentication
ENCRYPTION (data encryption)	**DISABLE:** Disable **WEP:** WEP (Wired Equivalent Privacy) method **TKIP:** TKIP (Temporal Key Integrity Protocol) method **AES:** AES (Advanced Encryption Standard) method

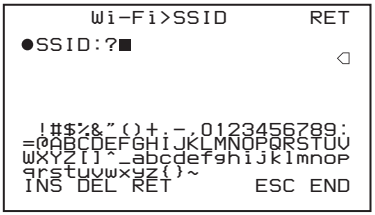
Note

Some limitations apply to combinations of the "NETWORK TYPE", "AUTH", and "ENCRYPTION" settings.

To enter an SSID

Select SSID, press the MENU knob to display the Wi-Fi>SSID page, and then press the MENU knob again.

When you press the MENU knob once more, an ■ appears over the first character in the input string, and the unit enters character input mode.



*See steps **3** and **4** in "Setting the shot ID" (page 205) for information about how to enter characters.*

To set ENCRYPTION options

Depending on the setting of ENCRYPTION, you must set the following options.

When ENCRYPTION is WEP:

Item name	Setting
WEP KEY INDEX	1 to 4
INPUT SELECT (network key format and length)	**ASCII5:** 5 characters ASCII format **ASCII13:** 13 characters ASCII format **HEX10:** 10 hexadecimal digits **HEX26:** 26 hexadecimal digits
KEY (network key)	ASCII characters or hexadecimal number (format specified with INPUT SELECT)

When ENCRYPTION is TKIP or AES:

Item name	Setting
INPUT SELECT (network key format and length)	**ASCII8-63:** 63 characters ASCII 8-bit format **HEX64:** 64 hexadecimal digits

Item name	Setting
KEY (network key)	ASCII characters or hexadecimal number (format specified with INPUT SELECT)

*See steps **3** and **4** in "Setting the shot ID" (page 205) for information about how to enter the key.*

To specify a connection destination by WPS operations

In infrastructure mode only, you can use WPS (Wi-Fi Protected Setup) to specify a connection destination (access point) semi-automatically.

Notes

- WPS does not support the following.
  - Ad hoc mode
  - IEEE 802.1x
- The access point must support WPS.
- In addition to the settings made here, you must also make network settings on the NETWORK page of the MAINTENANCE menu.

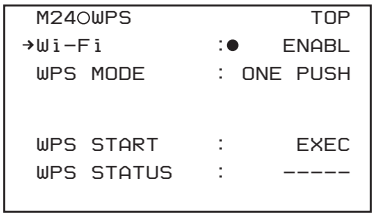
(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the WPS page of the MAINTENANCE menu and then press the MENU knob.

See "Basic menu operations" (page 192) for more information about menu operations.

2 Select "ENABLE" and then press the MENU knob.

The screen changes to the operation screen.



3 Set WPS MODE to one of the following.

ONE PUSH: Connect using the one push method

PIN CODE: Connect using the PIN code entry method.

When you select "PIN CODE"

A PIN item appears. Execute "UPDATE" in that item to display a PIN code for this unit.

4 Select "WPS START" and then press the MENU knob.

WPS setup starts. During execution, the progress and results appear after WPS STATUS.

SCANNING: Scanning for an access point

OK: Detection successful

NG: Detection failed

When execution finishes, the screen changes to the ACCESS PNT page.

5 Select the desired connection destination from the detected access points, and then press the MENU knob.

Setting the color temperature manually

You can manually adjust the value of the white balance by setting the color temperature.
(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the WHITE page of the PAINT menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.

You can set the following items on the WHITE page.

Item	Description
COLOR TEMP <A>	Sets the color temperature for the desired value. Adjust the value while looking at the real image because error tends to be bigger for adjustment of high color temperature.
C TEMP BAL <A>	Adjusts the value more precisely when the color temperature adjustment through COLOR TEMP is not satisfactory.
R GAIN <A>	Changes only the value of R GAIN.

Item	Description
B GAIN <A>	Changes only the value of B GAIN.

The above table shows the adjustment of the white balance of channel A. Items followed by <B> are used to adjust the white balance of channel B.

3 Turn the MENU knob to change the setting, and press the MENU knob.

4 Repeat steps 2 and 3 until you have set all of the desired items.

Specifying an offset for the auto white balance setting

By setting an offset for the value of auto white balance, you can make the picture warmer or colder.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the OFFSET WHT page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select the desired item, and press the MENU knob.
You can set the following items in the OFFSET WHT page.

Item	Description
OFFSET WHITE <A>	When this item is set to ON, the offset adjusted on this page is added to the white balance for channel A.
WARM-COOL <A>	When OFFSET WHITE <A> is "ON", sets the offset for the white balance of channel A, using the color temperature. Adjust the value while looking at the real image because error tends to be bigger for adjustment of high color temperature.
WARM-COOL BAL <A>	Adjusts the value more precisely if the adjustment by WARM-COOL <A> is not satisfactory.
OFFSET WHITE <B>	When this item is set to ON, the offset adjusted on this page is added to the white balance for channel B.
WARM-COOL <B>	When OFFSET WHITE <B> is "ON", sets the offset for the white balance of channel B, using the color temperature. Adjust the value while looking at the real image because error tends to be bigger for adjustment of high color temperature.
WARM-COOL BAL <B>	Adjusts the value more precisely if the adjustment by WARM-COOL <B> is not satisfactory.

3 Set the WHITE BAL switch to the channel (A or B) that you want to set.

Note

If the WHITE BAL switch is not set to A or B, the adjusted value is not reflected in the video output even though you carry out the following operation.

4 Turn the MENU knob to change the setting, and press the MENU knob.
If you want to set the other channel, go back to step **2**.

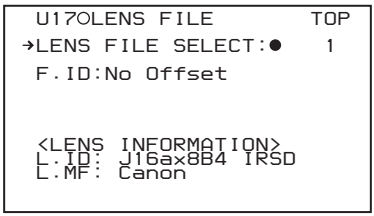
Selecting the lens file

The LENS FILE page of the USER menu allows you to change the lens file according to the lens in use.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the LENS FILE page of the USER menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

The LENS FILE page shows the name (F.ID) of the currently selected lens file.
The lens name (L.ID) and manufacturer (L.MF) appear when a lens that supports serial communications is mounted.



2 Select LENS FILE SELECT, and press the MENU knob.

3 Turn the MENU knob to change the setting, and press the MENU knob.

Setting the UMID data

What is a UMID?

The UMID (Unique Material Identifier) is a unique identifier for audio-visual material defined by the SMPTE 330M-2004 standard. The UMID may be used either as the 32-byte Basic UMID or as the Extended UMID, which includes an additional 32 bytes of Source Pack to make a total 64 bytes.

For details, refer to SMPTE 330M.

Globally unique ID is automatically recorded in clip units.
The Extended UMID is metadata that provides additional information such as location, time/date, company and so on.

Using the Extended UMID

You have to enter a country code, organization code and user code. Set the country code referring to the ISO 3166 table, and set the organization code and user code independently.

For details, see "About UMID ownership information" (page 217).

Functions of UMID data

The UMID data enables the followings:

- Add a globally unique ID to every clip of audio-visual material. The unique ID is used to detect the material source and to link it with the original source material.
- Distinguishing between original material and copied material. 00 is added to the Instance Number for original material.
- Recording based on the UTC. The UTC is used when recording the UMID. This enables uniform control of source material recorded all over the world based on the universal timecode.
- Calculating the date difference among source materials. The source material is recorded based on the MJD (Modified Julian Date), which enables easy calculation of date difference among source materials.

To set UMID ownership information

(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the UMID SET page of the OPERATION menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Set the following item.

Item	Contents
COUNTRY CODE	Country code
ORGANIZATION	Organization code
USER CODE	User code
TIME ZONE	Time difference from UTC

For details on how to enter characters, see "Setting the shot ID" (page 205).

3 Press the MENU knob.

About UMID ownership information

COUNTRY CODE

Enter an abbreviated alphanumeric string (4-byte alphanumeric strings) according to the values defined in ISO 3166-1.
There are about 240 country codes.
Find your own country code on the following home page.
Refer to ISO 3166-1:
http://www.iso.org/iso/country-codes/iso_3166_code_lists.htm

When the country code is less than 4 bytes, the active part of the code will occupy the first part of the 4-bytes and the remainder must be filled with the space character (20h).

Example: In the case of Japan
For Japan, if the country code is JP, it is 2 bytes, if JPN, it is 3 bytes.
Thus, enter the following:
JP_ _
or
JPN _
where _ represents a space.

ORGANIZATION (organization code)

Enter an abbreviated 4-byte alphanumeric string for the organization code.

Notes

- Organization codes must be acquired by applying to the SMPTE registration office.
  When no organization code has been acquired, it is forbidden to enter an arbitrary string. As a rule, the code "00" must be entered. Freelance operators who do not belong to an origination should enter "~".
- There are no problems in recording or playing back audio-video signals, if ORGANIZATION is not set.

USER CODE

Enter the 4-byte alphanumeric strings for user identification.
The user code is registered with each organization locally. It is usually not centrally registered.
When the user code is less than 4 bytes, enter the user code from the beginning of the 4 bytes and enter the space character (20h) in the remaining strings.
The methods used depend on the organization.

Note

User code cannot be entered when no organization code has been entered.

TIME ZONE

Set the time difference from UTC.

Notes

- The UTC is calculated based on the local time, using the time zone. If the time zone is not set, the UTC is not recorded correctly.
- When you change the time zone, adjust the internal clock to local time and turn the power of the camcorder off and then the power on again.

Chapter 7 Saving and Loading User Setting Data

Saving and Recalling User Files

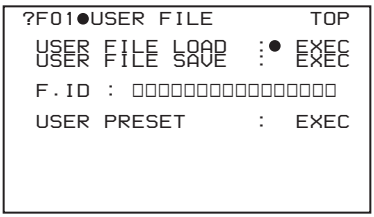
The camcorder is equipped with a USB connector, which enables you to save the settings in the USER menu as a user file onto a USB flash drive. You can load these files from the USB flash drive for immediate recall of a particular setting configuration.
In addition to user files, you can save scene files, reference files, lens files and ALL files on a USB flash drive.
When a menu is displayed, connecting a USB flash drive displays the appropriate file-related menu page automatically.

Saving user menu data on a USB flash drive

You can save USER menu settings held in the camcorder as user files on a USB flash drive.
You can save up to 100 user files on a USB flash drive.
Connect the USB flash drive, then proceed as follows.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the USER FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).



To set a file ID for the data to be saved
Set the file ID before going to step **2**.

For details on setting the file ID, see "To set the file ID" (page 220).

2 Select USER FILE SAVE, and press the MENU knob.
The USER SAVE page appears.
Up to 20 pages, from P00 to P19, can be used to save user files on the USB flash drive.
Each page can hold up to five files.

3 Turn the MENU knob until the page which contains the desired file number appears, and press the MENU knob.

4 Select the desired file number, and press the MENU knob.
The message "SAVE OK? YES ➧ NO" appears.
If a file number is followed by "NEW FILE", this means that the file is empty. If data is stored in the file, the file number is followed by the file name.

5 To carry out the save, select YES and press the MENU knob.
To cancel, press the MENU knob leaving ➧ pointing to NO.

When the saving is completed, the message "COMPLETE" appears.

If no USB flash drive is connected
The message "NO USB MEMORY" will appear. Connect a USB flash drive and carry out the operation once again.

If you select a file number where data has already been saved
The message "OVERWRITE OK? YES ➧ NO" appears.
- To stop overwriting, press the MENU knob leaving ➧ pointing to NO.
- To overwrite, select YES and press the MENU knob.

You can select the information displayed on each USER SAVE or USER LOAD page.

For details, see "To select the file information items to be displayed" (page 221).

About the USER menu settings to be saved on a USB flash drive

Settings for items on all pages of the USER menu are saved on the USB flash drive as a user file.

Note

The following items cannot be saved.

- LOAD CUSTOM DATA, LOAD OUT OF USER, BEFORE FILE PAGE, and USER LOAD WHITE on the USER FILE 2 page
- SCENE WHITE DATA on the REFERENCE page
- SLOW&QUICK, FRAME RATE on the REC FUNCTION page
- LENS FILE SELECT on the LENS FILE page
- SYSTEM LINE, SYSTEM FREQUENCY, and COUNTRY on the FORMAT page
- NUMERIC on the CLIP TITLE page
- SKIN AREA IND and SKIN DTL SELECT on the SKIN DETAIL page
- MATRIX AREA IND and MTX(MULTI) AXIS on the MTX MULTI page

If data cannot be saved

If one of the following error messages appears during or after the save operation, then the data was not saved.

Error message	Cause	Action
NO USB MEMORY (flashing)	No USB flash drive is connected.	Connect or reconnect the USB flash drive.
USB MEMORY INHIBIT! (flashing)	The LOCK switch on the USB flash drive is set to the write protect position.	Set the LOCK switch to the write enable position.
USB MEMORY ERROR (flashing)	A USB flash drive error occurred.	Reconnect to confirm the error, and consult a Sony service representative.

To set the file ID

You can set an file ID before you save your data as a user file. This will help you identify the user file quickly. The file ID that has been set is saved together with the data.

Note

Set the file ID before saving data on the USB flash drive. Otherwise, the file ID is not saved with the other data.

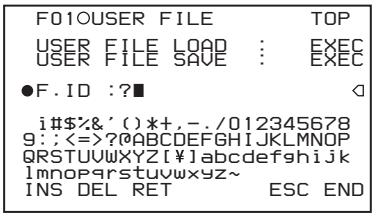
(How to select an item in the menu screen: Turn the MENU knob to move ➔ to the desired item.)

1 Display the USER FILE page of the FILE menu.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select F. ID, and press the MENU knob.

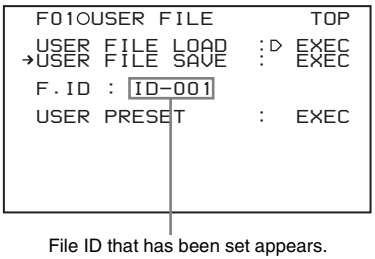
A character table appears.



3 Follow steps 3 and 4 described in "Setting the shot ID" *(page 205)* **to enter characters.**

4 When you have finished entering the file ID, turn the MENU knob to move ■ to END, and press the MENU knob.

The entered file ID is now displayed.



File ID that has been set appears.

When you carry out a user file save operation *(see page 219)*, the set file ID is saved on the USB flash drive together with the data.

To select the file information items to be displayed

You can select the user file information items to be displayed on the USER FILE SAVE page and USER FILE LOAD page (P00 to P19), that are used to save and load data to and from a USB flash drive.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display a USER FILE LOAD page or USER FILE SAVE page of the USER FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select DISPLAY MODE, and press the MENU knob.

3 Select the desired type of file information, and press the MENU knob.

Display type	Description
ALL	File ID (10 characters) and date (year/month/day)
F.ID	File ID (16 characters)
DATE	Date saved (year/month/day/ hours/minutes/seconds)
MODEL	Information on the model

Loading saved data from a USB flash drive

Note

The data loaded from the USB flash drive overwrites the data saved in the camcorder.

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the USER FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select USER FILE LOAD, and press the MENU knob.
The USER LOAD page appears.

3 Turn the MENU knob until the page which contains the desired file number appears, then press the MENU knob.

4 Select the desired file number, and press the MENU knob.
The message "LOAD OK? YES ➧ NO" appears.

5 To carry out the load, select YES and press the MENU knob.
To cancel, press the MENU knob leaving ➧ pointing to NO.

The access indicator lights.
When the load is completed, the message "COMPLETE" appears and the access indicator goes off.

If data cannot be loaded

If one of the following error messages appears during or after the load operation, then the data was not loaded.

Error message	Cause	Action
NO USB MEMORY (flashing)	No USB flash drive is connected.	Connect or reconnect the USB flash drive.
USB MEMORY ERROR (flashing)	A USB flash drive error occurred.	Reconnect to confirm the error, and consult a Sony service representative.
FILE ERROR (flashing)	The USB flash drive contains data that cannot be loaded into this camcorder.	Data saved on a USB flash drive using a camcorder whose model is not the same as this camcorder cannot be loaded into this camcorder.

Returning the user file settings to the standard settings

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the USER FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select USER PRESET, and press the MENU knob.

Saving and Loading Scene Files

You can save various settings for shooting a particular scene as a scene file. By loading the scene file, you can quickly recreate setup conditions suitable for the scene. You can save up to five scene files in the camcorder memory and up to 100 scene files on a USB flash drive.
You can also load data from the USB flash drive into the camcorder memory.

Data that can be saved in a scene file

You can save the following data in a scene file:

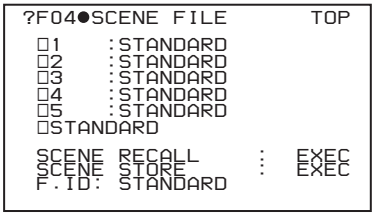
- Values adjusted using the PAINT menu
- Shutter speed settings made in the standard mode and ECS mode
- The white balance data included in a scene file depends on the SCENE WHITE DATA setting on the REFERENCE page of the FILE menu.

Saving a scene file

To save a scene file on a USB flash drive, connect the USB flash drive into the USB connector before starting the following operation.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the SCENE FILE page of the FILE menu, and press the MENU knob.

For details on menu operation, see "Basic menu operations" (page 192).



To set a file ID for the data to be saved
Set the file ID before going to step **2**.

For details on setting the file ID, see "To set the file ID" (page 220).

2 Select SCENE STORE, and press the MENU knob.
The SCENE STORE page appears.

3 Press the MENU knob, then select the desired file number, and press the MENU knob again.
The file to be saved is selected.

When no USB flash drive is connected
Select the desired memory number, and press the MENU knob.
When the save is completed, the SCENE FILE page appears again.

When you select a file number where data has already been saved
The message "OVERWRITE OK? YES ➧ NO" appears.
- To cancel the overwriting, press the MENU knob leaving ➧ pointing to NO.
- To overwrite, select YES and press the MENU knob.

When a USB flash drive is connected
You can use up to 20 pages, from P01 to P20, to save scene files on the USB flash drive. Each page can hold up to five files.

① Turn the MENU knob until the page which contains the desired file number appears, then press the MENU knob.
② Select the desired file number, and press the MENU knob.
The message "STORE OK? YES ➧ NO" appears.
③ To carry out the save, select YES and press the MENU knob.
To cancel, press the MENU knob leaving ➧ pointing to NO.

You can select the file information items to be displayed on each page of SCENE STORE and SCENE RECALL.

For details, see "To select the file information items to be displayed" (page 221).

To save scene files stored in the camcorder memory on a USB flash drive

All five scene files stored in the camcorder memory can be saved on a USB flash drive in a single operation.

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the SCENE FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select SCENE STORE, and press the MENU knob.
One of the SCENE STORE pages appears.

3 Turn the MENU knob to select the desired SCENE STORE page, and press the MENU knob.

4 Select 5FILE SAVE ➧ MEM1-5, and press the MENU knob.
The message "STORE OK? YES ➧ NO"appears.

5 To carry out the save, select YES and press the MENU knob.
To cancel, press the MENU knob leaving ➧ pointing to NO.

When the save is completed, the message "COMPLETE" appears.

Note

If files have been saved in the page selected in step **3**, those files are replaced with files loaded from the camcorder memory. For example, files from 001 to 005 are replaced by the above procedure.

To set the file ID

You can set an file ID before you save your data as a scene file. This will help you identify the scene file quickly. The file ID that has been set is saved together with the data.
You can carry out a scene file ID setting operation on the SCENE FILE page of the FILE menu.

*For details about this operation, see the description of step **2** and following of "To set the file ID" (page 220).*

To select the file information items to be displayed

You can select the items of file information to be displayed on the SCENE STORE pages (P01 to P20) or the SCENE RECALL pages (P01 to P20) used for saving data to or loading data from a USB flash drive.
You can select the scene file information items to be displayed on the SCENE STORE page and SCENE RECALL page of the SCENE FILE menu.

For details about item selection, see the description of step **2** *and following of "To select the file information items to be displayed" (page 221).*

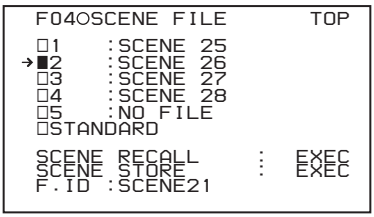
Loading scene files

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 Display the SCENE FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 To load the scene file stored in the camcorder, select the desired file number, and press the MENU knob.
☐ on the left of the file number changes to ■. The camcorder is set up according to the loaded scene file.



When DISP SCENE FILE on the VF DISP 3 page of the OPERATION menu is set to "ON", the number of the currently loaded scene file is displayed on the viewfinder screen *(see page 31)*.

To cancel the selected scene file
Turn the MENU knob to move ➧ to ■, and press the MENU knob again. ■ changes to ☐. The camcorder returns to the settings before selecting this scene file.

To load a scene file saved on a USB flash drive

① Select SCENE RECALL, and press the MENU knob.
The SCENE RECALL page appears.
② Turn the MENU knob until the page which contains the desired file number appears, then press the MENU knob.
③ Select the desired file number, and press the MENU knob.
The message "RECALL OK? YES ➧ NO" appears.

3 To carry out the recall, select YES and press the MENU knob.
To cancel, press the MENU knob leaving ➧ pointing to NO.
When the loading is completed, the message "COMPLETE" appears. The camcorder is set up according to the loaded scene file. If no file is present with a particular file number, this is shown as "NO FILE".

To load scene files from a USB flash drive into the camcorder memory

You can load up to five scene files stored on a USB flash drive into the camcorder memory in a single operation.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

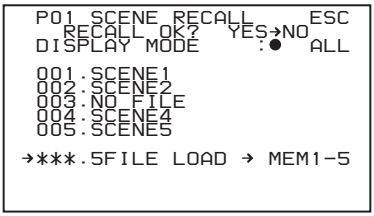
1 Display the SCENE FILE page of the FILE menu, and press the MENU knob.

For details on menu operations, see "Basic menu operations" (page 192).

2 Select SCENE RECALL, and press the MENU knob.
The SCENE RECALL page appears.

3 Turn the MENU knob until the SCENE RECALL page which contains the desired scene files appears, and press the MENU knob.

4 Select 5FILE LOAD ➧ MEM1-5, and press the MENU knob.
The message "RECALL OK? YES ➧ NO" appears.



5 **To carry out the load (recall), select YES and press the MENU knob.**
To cancel, press the MENU knob leaving ➧ pointing to NO.

When loading is complete, the message "COMPLETE" appears and the access indicator goes off.

Notes

- The scene files loaded from a USB flash drive overwrite data saved in the camcorder memory.
- To load the scene file saved in the camcorder memory when the USB flash drive is connected, return to the P00 SCENE RECALL page and load the desired scene file in the camcorder memory.
- When there is no file to be loaded (shown as "NO FILE"), an existing file of the same number is unaffected. In the example shown in step **4**, MEM3 is not overwritten.

Returning the scene file settings to the standard settings

(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 **Display the SCENE FILE page of the FILE menu, and press the MENU knob.**

For details on menu operations, see "Basic menu operations" (page 192).

2 **Select STANDARD, and press the MENU knob.**
☐ displayed on the left of STANDARD changes to ■. When ■ changes to ☐ once again, the settings of the camcorder are reset to the standard settings.

If you press the MENU knob again while ■ is displayed, the operation is cancelled and the camcorder returns to the settings before STANDARD was selected.

Jumping to a File-Related Menu Page when Connecting a USB Flash Drive

A USB flash drive enables you to save user files, scene files, lens files, reference files and ALL files.
The camcorder menu system allows you to make a setting so that when a USB flash drive holding these files is connected while in menu operating mode, a menu page relating to the desired file is automatically displayed on the screen. Thus you can proceed to file operation quickly. This is very convenient especially when you manage data files using USB flash drives.
(How to select an item in the menu screen: Turn the MENU knob to move ➧ to the desired item.)

1 **Display the USB MEMORY page of the FILE menu, and press the MENU knob.**

For details on menu operations, see "Basic menu operations" (page 192).

2 **Select USB IN > JUMP TO, and press the MENU knob.**
The USB IN > JUMP TO page allows you to select one of the following settings.

Setting	Description
OFF	Disables this function. Menu pages do not change when a USB flash drive is connected.
USER	Jumps to the USER FILE page.
ALL	Jumps to the ALL FILE page.
SCENE	Jumps to the SCENE FILE page.
LENS	Jumps to the LENS FILE 1 page.
REFER	Jumps to the REFERENCE page.
USER 1	Jumps to the USER 1 FILE page.

3 **Turn the MENU knob until the name of the desired file page appears, then press the MENU knob.**

Note

In the following cases, jumping to the target page is impossible even when a USB flash drive is inserted.

- When the power is turned on after you insert a USB flash drive.

- When OFF is selected on the USB IN > JUMP TO page.
- When any of the following menu pages is already displayed.
  - A file-related page such as the USER FILE page of the FILE menu
  - USB MEMORY, ALL FILE, SCENE FILE, LENS FILE, or REFERENCE page

Chapter 8 File Operations

Overview

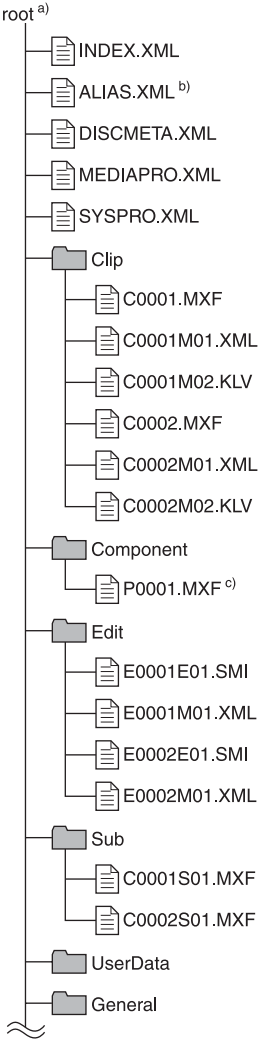
A remote computer can be connected to this unit via FTP and used to operate on recorded data which has been saved in data files, such as video and audio data files.
Connect the network connectors on this unit and the remote computer, using a network cable *(see page 232)*.

Directory structure

The following figure shows the directory structure of discs visible to a remote computer.

Note

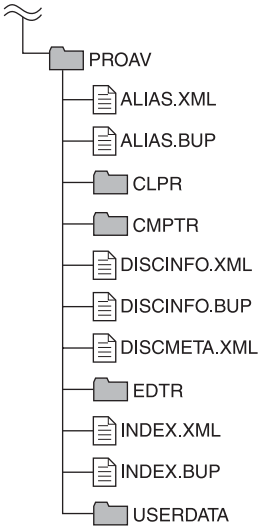
This structure is not the same as the actual structure recorded on the disc.



(Continued)

a) Root directory
b) Only when NAMING FORM on the FILE NAMING page of the OPERATION menu is set to FREE
c) Files generated when voice over editing is executed on the PDW-HR1.

(Continued)



File operation restrictions

This section explains which operations are possible on files stored in each directory. When required, the following operation tables distinguish reading and writing from partial reading and writing.

Read: Read data sequentially from the start to the end of the file.

Partial read: Read only a part of the data in the file.

Write: Write data sequentially from the start to the end of the file.

Partial write: Write data to a part of the file only.

Note

Operations other than Read and Partial read are possible only when the Write Inhibit tab of the disc is set to recording enabled.

Root directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
INDEX.XML	Contains data for management of the material on the disc.	Yes	No	No	No	No
ALIAS.XML [a)]	Contains conversion tables for assigning user-defined names to clips and clip lists.	Yes	No	No	No	No
DISCMETA.XML	Contains metadata to indicate the disc properties.	Yes	Yes [b)]	No	No	No
MEDIAPRO.XML	Contains a list of materials on the disc, basic properties, related information, and information about access methods.	Yes	No	No	No	No
SYSPRO.XML	Contains system setting information and menu setting information for the devices.	Yes	No	No	No	No

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
Other files	Files other than the above	-	No	-	No	-

a) Only when NAMING FORM on the FILE NAMING page of the OPERATION menu is set to FREE.
b) Only files which can be written by XDCAM.

Notes

- Directories cannot be created in the root directory.
- The directories in the root directory (Clip, Edit, Sub, UserData, General, and PROAV) cannot be deleted or renamed.

Clip directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
C*.MXF [a)]	Clip file created by recording (MXF file) *: 0001 to 9999	Yes	No [b), c)]	Yes [d)]	Yes [c)]	Yes [e)]
C*M01.XML [a)]	Metadata file generated automatically when C*.MXF file is created. *: 0001 to 9999	Yes	Yes [f)]	No [g)]	No [h)]	No [i)]
C*M02.KLV [a)]	User metadata file. This type of file is generated automatically during recording via an FTP connection when the unit recognizes that an MXF file contains metadata that was generated by a non-XDCAM device. *: 0001 to 9999	Yes	Yes [f)]	No [g)]	Yes [f)]	Yes [i)]
Other files	Files other than the above	-	No	-	No	-

a) The “C*” part can be changed to a user-defined name.
b) Overwriting is not possible.
c) Only files which are 2 seconds or longer in length, in a format matching the format (system frequency (59.94i, 50i, or 25P)) and recording format (MPEG HD422 and number of audio channels) of the recorded sections of the disc, and which can be overwritten by XDCAM. (Partial writing is not possible.)
d) Only when NAMING FORM on the FILE NAMING page of the OPERATION menu is set to FREE.
e) Any clip may be selected and deleted.
f) Only files which can be written by XDCAM.
g) When the “C*” part of a C*.MXF file name is changed, a C*M01.XML file (or a C*M02.KLV file) with the same name in the “C*” part is also changed automatically.
h) When a C*.MXF file is created, a C*M01.XML file with the same name in the “C*” part is created automatically.
i) When a C*.MXF file is deleted, the C*M01.XML file (or a C*M02.KLV file) with the same name in the “C*” part is also deleted automatically.

Note

Directories cannot be created in the Clip directory.

Component directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
P*.MXF [a)]	Audio clip files (MXF files) generated when you execute voice over editing on the PDW-HR1 *: 0001 to 0099	Yes	Yes [b), c)]	Yes [e)]	Yes [b), d)]	Yes [f)]
Other files	Files other than the above	-	No	-	No	-

a) The "P*" part can be handled like a file with a user-defined name.
b) Only files which are 2 seconds or longer in length and which can be written by XDCAM.
c) Overwriting is not possible.
d) Multiple files cannot be opened at the same time.
e) Only when NAMING FORM on the FILE NAMING page of the OPERATION menu is set to "FREE".
f) Selection and deletion of any specified clip is possible.

Note

Directories cannot be created in the Component directory.

Edit directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
E*E01.SMI [a)]	Clip list file *: 0001 to 0099	Yes	Yes [b)]	Yes [c)]	Yes [d)]	Yes
E*M01.XML [a)]	Metadata file generated automatically when E*E01.SMI file is created. *: 0001 to 0099	Yes	Yes [b)]	No [e)]	No [f)]	No [g)]
Other files	Files other than the above	-	No	-	No	-

a) The "E*" part can be changed to a user-defined name.
b) Only files which can be written by XDCAM. Partial writing is not possible.
c) Only when NAMING FORM on the FILE NAMING page of the OPERATION menu is set to FREE.
d) Only files which can be written by XDCAM.
e) When the "E*" part of a E*E01.SMI is changed, an E*M01.XML file with the same name in the "E*" part is also changed automatically.
f) When an E*E01.SMI file is created, an E*M01.XML file with the same name in the "E*" part is also generated automatically.
g) When an E*E01.SMI file is deleted, an E*M01.XML file with the same name in the "E*" part is also deleted automatically.

Note

Directories cannot be created in the Edit directory.

Sub directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
C*S01.MXF [a)]	Proxy AV data (MXF file) generated automatically when a C*.MXF file is created. *: 0001 to 9999	Yes	No	No [b)]	No [c)]	No [d)]
Other files	Files other than the above	-	No	-	No	-

a) The “C*” part can be changed to a user-defined name.
b) When the “C*” part of a C*.MXF file name is changed, a C*S01.MXF file with the same name in the “C*” part is generated automatically.
c) When a C*.MXF file is created, a C*S01.MXF file with the same name in the “C*” part is generated automatically.
d) When a C*.MXF file is deleted, the C*S01.MXF file with the same name in the “C*” part is also deleted automatically.

Note

Directories cannot be created in the Sub directory.

UserData directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
Any file		Yes	Yes	Yes [a)]	Yes	Yes

a) UTF-8 file names can be up to 63 bytes in length. (Depending on the character type, file names (including extension) may be limited to 21 characters.)

The following directory operations are possible in the UserData directory.
- Directory creation (up to 62 levels, including the UserData directory)
- Deletion and renaming of directories

General directory

File name	Content	Operations				
		Read/ Partial read	Write/ Partial write	Rename	Create	Delete
Any file		Yes	Yes	Yes [a)]	Yes	Yes

a) UTF-8 file names can be up to 63 bytes in length. (Depending on the character type, file names (including extension) may be limited to 21 characters.)

The following directory operations are possible in the General directory.
- Directory creation (up to 63 levels, including the General directory)
- Deletion and renaming of directories

Notes

- The maximum number of files that can be created on one disc, including directories, is 5,000 for a single-layer disc and 6,000 for a dual-layer disc.
- File names and directory names can use letters, numbers, and symbols from the Unicode 2.0 (UTF-8) character set.
  However, the following control characters and symbols cannot be used.
  - Control characters: U+0000 to U+001F, U+007F
  - Symbols: ", *, /, :, <, >, ', ?, \, |

- To create a new directory in the General directory, first create a directory on the desktop and rename it using only characters that can be used on this unit. Then drag it from the desktop and drop it in the General directory.

PROAV directory

This directory displays individual files on the disc.
To enable display of the PROAV directory, set PROAV DISPLAY on the CAM CONFIG 1 page of the MAINTENANCE menu to “ENABL”.

FTP File Operations

File operations between this unit and a remote computer can be carried out by the File Transfer Protocol (called FTP below).

Preparations

1 Connect the network connectors of this unit and a remote computer with a network cable. Or connect this unit to the network to which the remote computer is connected.

2 On the NETWORK SETTING page of the MAINTENANCE menu, set the IP address and other network setting items for this unit. 1)

For details on menu operations, see “Basic menu operations” (page 192).

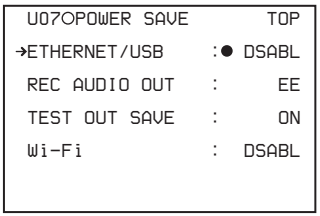
If network settings have already been made
Check the IP address of this unit.

1) This unit is able to acquire an IP address automatically from a DHCP server. It also supports an Auto-IP function to assign an IP address automatically when access from this unit to the DHCP server times out. You can check DHCP settings and the assigned IP address on the NETWORK 1 page of the MAINTENANCE menu.

Note

If this unit is directly connected to a computer running Windows Vista or Windows 7 with a network cable, change the setting as follows: (1) Open “Network and Sharing Center” >“Manage network connections” >“Local Area Connection” in the control panel. (2) In the “Local Area Connection Properties”, uncheck the “Internet Protocol Version 6 (TCP/IPv6)”, and then click the OK button.

3 Turn the MENU knob to scroll to the POWER SAVE page of the OPERATION menu, then press the MENU knob.



4 Move ➔ to ETHERNET/USB then press the MENU knob.

5 Turn the MENU knob to select "ENABL", then press the MENU knob.

Making FTP connections

FTP connections between this unit and a remote computer can be made with either of the following.

- The command prompt
- FTP client software

This section explains how to use the command prompt. For more information about using FTP client software, refer to the documentation of the FTP client software on your system.

To log in

1 Load a disc into this unit and put the unit into the following state.

Recording, playback, serch, and other disc operations: Stopped
THUMBNAIL indicator: Off
Disc access by clip deletion, disc formatting, or other operation: Stopped
Picture Cache function and Interval Rec function: Off
Recording of video from external devices: Disabled
Connections between this unit and a computer by the Live Logging function: Disconnected
Setting of LIVE LOGGING on the REC FUNCTION page of the OPERATION menu: Values other than VIEW (OFF or LIVE)
MENU ON/OFF switch: OFF
Unsaved current clip list: Save or clear

Note

Login is not possible unless the unit is in the state described above.

2 Start the command prompt.

3 Enter "ftp <SP> <IP address>", and press the Enter key. (<SP> refers to a space.)

For example, if the IP address of this unit is set to 192.168.001.010, enter "ftp 192.168.1.10".

Refer to the Windows help for more information about the FTP command.

If the connection succeeds, you are prompted to enter a user name.

4 Enter the user name "admin" and press the Enter key.

When the user name is verified, your are prompted to enter a password.

5 Enter the password and press the Enter key.

The password is set to the model name ("pdw-850") when the unit is shipped from the factory.
The login is complete when the password is verified.

See "Command list" (page 234) for the protocol supported by this unit.

If the connection times out

This unit terminates FTP connections if no command is received within 90 seconds of the last command. If this occurs, log out (see the next section) and repeat steps **2** to **4**.

Note

If you power this unit off during an FTP connection, the data transferred thus far is discarded.

To log out

To log out after finishing file operations, enter "QUIT" at the command prompt and press the Enter key.

Command list

This unit supports standard protocol *(see the next section)*, and extended protocol *(see page 237)*.

Notes

- To execute FTP commands, you must install application software with FTP function on your computer.
- The commands supported by application software vary.
- An FTP client that supports UTF-8 is required to use Unicode characters other than ASCII characters. Command prompt FTP commands do not support UTF-8.

Standard commands

In the command syntax column, <SP> means a space, entered by pressing the space bar, and <CRLF> means a new line, entered by pressing the Enter key.

USER

Send this command to begin the login process.

Syntax: USER <SP> <username> <CRLF>
Input example: USER admin

PASS

After sending the USER command, send this command to complete the login process.

Syntax: PASS <SP> <password> <CRLF>
Input example: PASS pdw-850

QUIT

Terminates the FTP connection. If a file is being transferred, terminates after completion of the transfer.

Syntax: QUIT <CRLF>

PORT

Specifies the IP address and port to which this unit should connect for the next file transfer (for data transfer from this unit).

Syntax: PORT <SP> <h1,h2,h3,h4,p1,p2> <CRLF>
h1 (most significant byte) to h4 (least significant byte): IP address
p1 (most significant byte), p2 (least significant byte): Port address
Input example: PORT 10,0,0,1,242,48
(IP address: 10.0.0.1, Port number: 62000)

PASV

This command requests this unit to "Listen" on a data port (which is not its default data port). It puts this unit into passive mode, waiting for the remote computer to make a data connection.

Syntax: PASV <CRLF>

TYPE

Specifies the type of data to be transferred.

Syntax: TYPE <SP> <type-code (options delimited by <SP>)> <CRLF>

<type-code> can be any of the following. However, for XDCAM, data is always transferred as "I", regardless of the type-code specification.

- A: ASCII
  - N: Non-print
  - T: Telnet format
  - C: ASA Carriage Control
- E: EBCDIC
  - N: Non-print
  - T: Telnet format
  - C: ASA Carriage Control
- I: IMAGE (Binary) (default)
- L: LOCAL BYTE
  - SIZE: byte size

Input example: TYPE I

STRU

Specifies the data structure.

Syntax: STRU <SP> <structure-code> <CRLF>

<structure-code> can be any of the following. However, for XDCAM, the structure is always "F", regardless of the structure-code specification.

- F: File structure (default)
- R: Record structure
- P: Page structure

Input example: STRU F

MODE

Specifies the transfer mode.

Syntax: MODE <SP> <mode-code> <CRLF>

<mode-code> can be any of the following. However, for XDCAM, the mode is always "S", regardless of the mode-code specification.

- S: Stream mode (default)
- B: Block mode
- C: Compressed mode

Input example: MODE S

LIST

Sends a list of files from this unit to the remote computer.

Syntax: LIST <SP> <options> <SP> <path-name> <CRLF>

<options> can be any of the following.

- -a: Also display file names that begin with ".".
- -F: Append "/" to directory names.

The following data is transferred, depending on whether <path-name> specifies a directory or file.

- Directory specified: A list of the files in the specified directory
- File specified: Information about the specified file
- No specification: A list of the files in the current directory.

The wildcard characters "*" (any string) and "?" (any character) may be used in <path-name>.

Input example 1: LIST -a Clip

Input example 2: LIST Clip/*.MXF

NLST

Sends a list of file names from this unit to the remote computer, with no other information.

Syntax: NLST <SP> <options or path-name> <CRLF>

The following options may be specified when no path name is specified.

- -a: Also display file names that begin with "."
- -I: Display information other than file name (gives the same result as the LIST command).
- -F: Append "/" to directory names.

The following data is transferred, depending on whether <path-name> specifies a directory or file.

- Directory specified: A list of the file names only in the specified directory
- No specification: A list of the file names only in the current directory.

The wildcard characters "*" (any string) and "?" (any character) may be used in <path-name>.

Input example 1: NLST-I

Input example 2: NLST Clip/*.MXF

RETR

Begins transfer of a copy of a file in the specified path on this unit to the current directory on the remote computer.

Syntax: RETR <SP> <path-name> <CRLF>

Input example: RETR Clip/C0001.MXF

STOR

Begins transfer of a copy of a file in the specified path on the remote computer to the current directory on this unit. Depending on the type of file transferred, the following items are created.

- C*.MXF file [1), 3)]
  - C*M01.XML file (metadata)
  - C*M02.KLV file (user metadata)
  - C*S01.MXF file (proxy AV data)
  - UMID (the UMID of the copy source file is not saved. However, it is saved if an immediately preceding SITE UMMD extended command has been issued.)
- E*E01.SMI file [2), 3)]
  - E*M01.XML file (metadata)

1) *: 0001 to 9999

2) *: 0001 to 0099

3) The unit can handle files with user-defined names in the "C*" and "E*"parts.

Notes

- For C*.MXF files, some data, such as file header metadata, may be missing.
- Depending on the transfer destination directory and the file type, transfer may not be possible.
- For C*.MXF files, the UMID of the copy source file is not saved. However, it is saved if an immediately preceding SITE UMMD extended command has been issued.

For details, see "File operation restrictions" (page 228).

Syntax: STOR <SP> <path-name> <CRLF>

Input example: STOR Edit/E0001E01.SMI

RNFR
RNTO

Rename a file. Specify the file to be renamed with the RNFR command, and specify the new name with the RNTO command. (Always follow a RNFR command with a RNTO command.)

Syntax: RNFR <SP> <path-name (before change)> <CRLF>
RNTO <SP> <path-name (after change)> <CRLF>

Input example: RNFR General/info.txt
RNTO General/clip_info.txt

DELE

Deletes the specified file on this unit.

Note

Depending on the directory and file type, deletion may not be possible.

For details, see "File operation restrictions" (page 228).

Syntax: DELE <SP> <path-name> <CRLF>

Input example: DELE Clip/C0099.MXF

STAT

Sends information about properties of the specified file, or about data transfer status, from this unit to the remote computer.

The following property information is sent, depending on the file type.

- MXF file
  - File name
  - File type
  - CODEC type
  - Frame rate
  - Number of audio channels
  - Duration
  - UMID
- non-MXF file
  - File name

Syntax: STAT <SP> <path-name> <CRLF>

The following data is transferred, depending on whether a file is specified with <path-name>.

- File specified: The properties of the specified file
- No specification: The size of the data transferred thus far (unit: bytes)

Input example: STAT Clip/C0001.MXF

ABOR

Requests this unit to abort a file transfer currently in progress.

Syntax: ABOR <CRLF>

SYST

Displays the system name of this unit.

Syntax: SYST <CRLF>

HELP

Displays a list of the commands supported by this unit, or an explanation of the specified command.

Syntax: HELP <SP> <command-name> <CRLF>

The following data is transferred, depending on whether a command name is specified with <command-name>.

- Command name specified: Explanation of the specified command.
- No specification: Command list

- **Input example:** HELP RETR

NOOP

Does nothing except return a response. (Used to check whether this unit is running.)

Syntax: NOOP <CRLF>

PWD

Displays the current directory ("/" if the directory is the root directory).

Syntax: PWD <CRLF>

CWD

Changes the current directory (moves from the current directory to another directory).

Syntax: CWD <SP> <path-name> <CRLF>

Moves to a directory as follows, depending on whether a directory is specified with <path-name>.

- Directory specified: To the specified directory
- No specification: To the root directory

Input example: CWD General

CDUP

Moves one level up in the directory structure (makes the parent of the current directory be the current directory).

Syntax: CDUP <CRLF>

MKD

Creates a new directory.

Note

Directories can be created only in the General directory.

For details, see "File operation restrictions" (page 228).

Syntax: MKD <SP> <path-name> <CRLF>

RMD

Deletes a directory.

Note

Directories can be deleted only in the General directory.

For details, see "File operation restrictions" (page 228).

Syntax: RMD <SP> <path-name> <CRLF>

MDTM

Acquires the date and time of the most recent modification of the file in the format

"YYYYMMDDhhmmss" (YYYY: year, MM: month, DD: day, hh: hour, mm: minute, ss: second).

Note

The date and time cannot be acquired in the following cases.

- When the path name includes a wildcard ("*", replaced by any string of characters, or "?", replaced by any single character).
- When the size of the path name is greater than 1023 bytes.

Syntax: MDTM <SP> <path-name> <CRLF>
Input example: MDTM PROAV/DISCMETA.XML

Extended commands

In the command syntax column, <SP> means a space, entered by pressing the space bar, and <CRLF> means a new line, entered by pressing the Enter key.

SITE REPF

Sends an MXF file from the specified path on this unit to the remote computer. This command allows you to specify a segment in the body of the MXF file (composed of video and audio data), for transfer of the required segment only.

Notes

- A segment greater than the file size cannot be specified.
- This command cannot be used when the path name contains a space. Use the SITE REPFL command instead.

Syntax: SITE REPF <SP> <path-name> <SP> <start-frame> <SP> <transfer-size> <CRLF>

<start-frame> specifies an offset from the start of the file. Data is transferred from the video frame at the offset (the first frame is 0).
<transfer-size> specifies the number of video frames to transfer (specify 0 to transfer to the end of the file).

Input example: SITE REPF Clip/C0001.MXF 5 150 (Transfer C0001.MXF. Body data is transferred only from frame 6 to frame 150.)

SITE REPFL

Sends an MXF file from the specified path on this unit to the remote computer. This command allows you to specify a segment in the body of the MXF file (composed of video and audio data), for transfer of the required segment only.

Note

A segment greater than the file size cannot be specified.

Syntax: SITE REPFL <SP> "<path-name>" <SP> <start-frame> <SP> <transfer-size> <CRLF>

<path-name> specifies the path name of the file to transfer. Enclose the path name in double quotation marks.
<start-frame> specifies an offset from the start of the file. Data is transferred from the video frame at the offset (the first frame is 0).
<transfer-size> specifies the number of video frames to transfer (specify 0 to transfer to the end of the file).

Input example: SITE REPFL "Clip/sakura 0001.MXF 5" 150 (Transfer sakura 0001.MXF. Body data is transferred only from frame 6 to frame 150.)

SITE FSTS

Acquires the system status of this unit.
One of the following status codes is sent.
0: Initial state, or no disc is loaded.
1: File system mount is OK.
3: File system mount is not OK.

Syntax: SITE FSTS <CRLF>

SITE MEID

Acquires the media ID of the disc loaded in this unit.

Syntax: SITE MEID <CRLF>

SITE FUNC

Acquires the function and version of the expanded commands.
Information is sent in the following format.
<main function> <SP> <branch function> <SP> <branch function version>
For XDCAM, sent in a format like "200 MXF DISK 1" (200 is a response code).

Syntax: SITE FUNC <CRLF>

SITE UMMD

When C*.MXF file is sent with the STOR, the copy source UMID is saved if this command is invoked immediately before the STOR command.

Syntax: SITE UMMD <CRLF>

SITE DF

Acquires the amount of free disc space.

Syntax: SITE <SP> DF <CRLF>

SITE CHMOD

Locks and unlocks clips. Also sets permissions for directories and files in the General directory.

Syntax: SITE CHMOD <SP> <flag> <SP> <path-name> <CRLF>

Specify one of the following values in <flag>, according to the specification in <path-name>.

- When a clip is specified in <path-name>:
  444: Lock.
  666: Unlock.
- When a directory in the General directory is specified in <path-name>:
  555: Forbid writing to the directory.
  777: Allow writing to the directory.
- When a file in the General directory is specified in <path-name>:
  444: Forbid writing to and execution of the file.
  555: Forbid writing to the file, but allow execution.
  666: Allow writing to the file, but forbid execution.
  777: Allow writing to and execution of the file.

Input example: SITE CHMOD 444 Clip/C0001.MXF (Lock clip C0001.MXF)

SITE TCPR

Presets the starting timecode of a clip copied with the STOR command. Specify the timecode in the format "ffssmmhh" (ff: frames, ss: seconds, mm: minutes, hh: hours).

Notes

- This command remains in effect until a STOR command is executed, or (if no STOR command is executed) until the FTP connection is terminated.
- If a SITE UMMD command is executed after this command, the SITE UMMD command takes priority and this command is discarded.
- If this command is executed several times in sequence, the last command takes priority.

Syntax: SITE TCPR <SP> <timecode > <CRLF>
Input example: SITE TCPR 00050001
(The starting timecode is preset to 01:00:05:00.)

Recording Continuous Timecode via FTP Connection

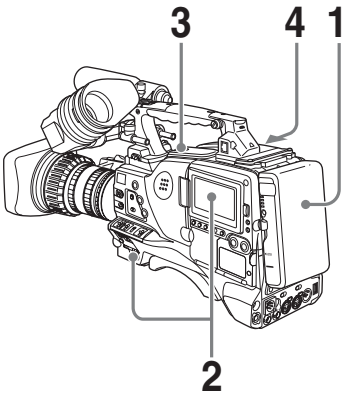
When you are connected to the unit via FTP, you can create new clips with timecode that is continuous with the timecode of the last frame of the last clip on the disc.
To record continuous timecode, set PRESET/REGEN/CLOCK switch to "REGEN", and then proceed as follows.
Use the "STOR" command to transfer clip files from the computer that is connected to this unit.
If you issue the "SITE UMMD" command immediately before the "STOR" command, the original timecode of the transferred file is recorded, regardless of the setting of PRESET/REGEN/CLOCK switch.

Chapter 9 Maintenance

Testing the Camcorder before Shooting

Check the functions of the camcorder before setting out for a shooting session, preferably by operating the camcorder together with a color video monitor.

Preparations for testing



1 Attach a fully charged battery pack.

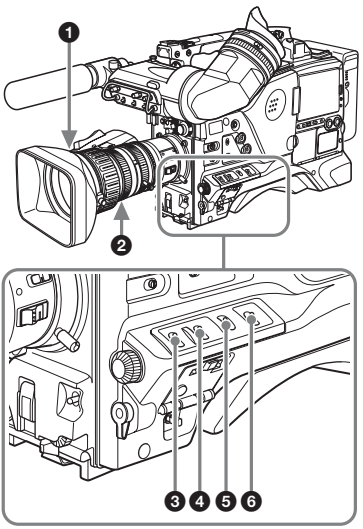
2 Set the POWER switch to ON and check that the BATT indicator shows at least five segments.
If the BATT indicator does not show at least five segments, replace the battery pack with a fully charged one.

3 Check that there are no obstructions near the disc compartment, and then press the EJECT button to open the disc compartment lid.

4 After confirming that the disc is not write-protected, load the disc and close the disc compartment lid.

Testing the camera

Set the switches and selectors as follows.



❶ Iris switch: Automatic
❷ Zoom selector: SERVO/MAN
❸ VDR SAVE/STBY switch: SAVE
❹ GAIN selector: Set as low as possible.
❺ OUTPUT/DCC switch: BARS
❻ WHITE BAL switch: A or B

Testing the viewfinder

1 Adjust the position of the viewfinder.

2 Check that the color bars are displayed on the viewfinder screen, and adjust the BRIGHT, CONTRAST, and PEAKING controls to give the best color bar display.

3 Check each of the following operations.

- The menu is displayed on the viewfinder screen.
- Turn the MENU knob and check that the menu page changes to the next page.
- Press the MENU knob and check that settings of each item of the selected page are displayed.
- Turn the MENU knob and check that ➔ moves within the page.
- Press the MENU knob and check that ➔ placed before the item changes to ● and ● placed before the setting of the item changes to **?**.
- Turn the MENU knob and check that the setting of the selected item changes.

4 Set the OUTPUT/DCC switch to CAM, and change the FILTER selector position in the sequence of 1, 2, 3 and 4.
Check that the FILTER indicator on the viewfinder screen displays the correct numbers.

5 Carry out of the following operations, and check that the ! indicator lights if the corresponding item has been turned on on the '!' LED page of the USER menu.

- Set the gain to anything but 0 dB by using the GAIN selector and the GAIN SW page of the OPERATION menu.
- Set the SHUTTER selector to ON.
- Set the WHITE BAL switch to PRST.
- Use the lens extender.
- Set the reference value of the auto iris to other than the standard value.

6 Flick the SHUTTER selector from ON to SELECT repeatedly, and check that the shutter setting changes on the viewfinder screen.

7 Pointing the camera at a suitable subject, focus the camera and check the picture on the viewfinder screen.

8 Set both of the AUDIO IN switches to FRONT, and check that when sound is input to a microphone connected to the MIC IN connector on the front of the camcorder, the audio level indicators appear on the viewfinder screen.

9 Check that setting the ZEBRA switch to ON and OFF makes the zebra pattern appear and disappear on the viewfinder screen.

Note

The results of checking in steps **3** to **9** may not be as expected, depending on the settings relating to the viewfinder display function. In this case, set the desired items on the VF DISP 1 and VF DISP 2 pages of the USER menu.

For details, see "Selecting the display items" (page 200).

Testing the iris and zoom functions

1 Set the zoom to automatic zoom mode and check that the power zoom operates correctly.

2 Set the zoom to manual zoom mode and check the zoom functions manually.

3 Set the iris switch on the lens to AUTO and point the camera at objects of different brightness. Check that the automatic iris adjustment operates correctly.

4 Set the iris switch on the lens to MANUAL and check that turning the iris ring manually adjusts the iris correctly.

5 Set the iris switch on the lens back to AUTO and check the following points when the GAIN selector is moved from L to M to H.

- Even when the brightness of the object does not change, the iris is automatically adjusted in accordance with the change in the gain setting.
- The gain indicator on the viewfinder screen changes to correspond to the change in setting.

6 If an extender mechanism is incorporated in your lens, put the extender lever of the lens into the 2× position and check the following points.
- The indication "EX" appears at the top left on the viewfinder screen.
- The auto iris functions correctly.

Testing the VDR

Perform tests (1) to (7) consecutively.

(1) Testing the recording and playback functions

1 Set the VDR SAVE/STBY switch to SAVE and check that the SAVE indicator in the viewfinder goes on.

2 Set the VDR SAVE/STBY switch to STBY and check that the SAVE indicator in the viewfinder goes off.

3 Set the switches located below the color LCD as follows.
BRIGHT button: H, M or L
DISP SEL/EXPAND button: STATUS
DISPLAY switch: COUNTER

4 Set the PRESET/REGEN/CLOCK switch to PRESET, and set the F-RUN/SET/R-RUN to R-RUN.

5 Press the REC START button and check the following points.
- The indication in the counter display on the LCD monitor is changing.
- The REC indicator in the viewfinder is on.
- The RF and SERVO indicators on the color LCD are off.

6 Press the REC START button again.
Check that recording stops and that the REC indicator in the viewfinder goes off.

7 Repeat the checks of steps 5 and 6, this time using the VTR button on the lens.
Press the RESET/RETURN button and check that the indication in the counter display on the LCD monitor is "00:00:00:00".

8 Press the F REV button, then press the PLAY/PAUSE button.
Check that fast reverse playback and normal playback are performed.

9 Press the STOP button, then press the F FWD button.
Check that playback stops and fast forward playback are performed.

10 Press the STOP button again, then press the PREV button.
Check that the image of the beginning of the current or previous clip is displayed.

11 Press the NEXT button, and check that the image of the beginning of the next clip is displayed.

(2) Testing the automatic audio level adjusting functions

1 Set the AUDIO IN CH-1/CH-2 switches to FRONT.

2 Set the AUDIO SELECT (CH-1/CH-2) switches to AUTO.

3 Set the AUDIO IN CH-3/CH-4 switches to F (FRONT).

4 Aim the microphone connected to the MIC IN connector at a suitable sound source. Check that the level indications for channels 1 to 4 correspond to the sound level, respectively.

(3) Testing the manual audio level adjusting functions

1 Set the AUDIO IN CH-1/CH-2 switches to FRONT.

2 Turn the MIC LEVEL control. Check that the channel-1 and -2 audio level meters on the LCD monitor show more and more segments as you turn the control counterclockwise as seen from the front of the camcorder.

(4) Testing the earphone and speaker

1 **Turn the MONITOR volume control and check that the speaker volume changes accordingly.**

2 **Connect an earphone to the front or rear EARPHONE jack.**

3 **Check that the speaker sound is cut off and that you can hear the sound from the microphone in the earphone.**

4 **Turn the MONITOR volume control and check that the earphone volume changes accordingly.**

5 **Connect the earphone to the other EARPHONE jack. Check the earphone as in step 3.**

(5) Testing external microphones

1 **Connect external microphones to the AUDIO IN CH1/CH2 connectors.**

2 **Set the +48V/OFF switches as follows.**
- If the connected microphone is of the internal power supply type, set the switch to OFF.
- If the connected microphone is of the external power supply type, set the switch to +48V.

3 **Set the AUDIO IN switches to REAR.**

4 **Aim the microphones at a sound source.**

5 **Check that the audio level meters on the LCD monitor and the audio level indicators in the viewfinder reflect the changing sound level.**

(6) Checking the XLR connection automatic detection function

Before starting to check, remove the front microphone connected to the MIC IN connector if it is connected.

1 **Perform the operations of steps 1 and 2 explained in "(5) Testing external microphones".**

2 **Set the AUDIO IN CH-1/CH-2 switches to FRONT.**

3 **Perform the operations of steps 4 and 5 explained in "(5) Testing external microphones".**
If the audio level meters on the color and monochrome LCDs and the audio level indicators in the viewfinder reflect the changing sound level, the function of the XLR connection automatic detection is working correctly.
If it does not reflect the changing sound level, the function of the XLR connection automatic detection function is off. Set REAR XLR AUTO to "ON" on the VDR MODE 1 page of the MAINTENANCE menu.
If it does not reflect even after making this setting, the XLR connection automatic detection function does not work correctly.

(7) Checking the user bit and timecode functions

1 **Set the user bits as required.**

For the operation, see "Setting the user bits" (page 67).

2 **Set the timecode.**

For the operation, see "Setting the timecode" (page 67).

3 **Set the F-RUN/SET/R-RUN switch to R-RUN.**

4 **Press the REC START button, and check that recording starts and that the timecode indication in the counter display changes.**

5 **Press the REC START button again, and check that recording stops and that the timecode indication stops changing.**

6 **Set the F-RUN/SET/R-RUN switch to F-RUN, and check that the timecode indication starts changing again and continues to change even when you restart recording and stop recording again.**

7 **Set the DISPLAY switch to U-BIT, and check that the user bit data that was set is displayed.**

Maintenance

Cleaning the viewfinder

Use a dust blower to clean the CRT screen and mirror inside the viewfinder barrel.
Clean the lens and protecting filter with a commercially available lens cleaner.

Caution

Never use organic solvents such as thinners.

Note about the battery terminal

The battery terminal of this unit (the connector for battery packs and AC adaptors) is a consumable part.
Power may not be supplied to the unit properly if the pins of the battery terminal are bent or deformed by shock or vibrations, or if they become corroded due to prolonged outdoor use.
Periodic inspections are recommended to keep the unit working properly and to prolong its usable lifetime.
Contact a Sony service or sales representative for more information about inspections.

Operation Warnings

If a problem occurs when the camcorder is powered or is being operated, a warning is issued by various visible and audible indicators. These visible and audible indicators are:

- In the status display on the LCD monitor: a warning message (“A” in the “Layout of the table of warning messages” below) and a warning indication (“B”)
- The WARNING indicator on the side panel of the camcorder (“C”), and a warning sound from the speaker and earphones (“D”)
- In the viewfinder: a warning message (“A”), and an indicator above or below the viewfinder screen (“E”)

The volume of the warning sound can be adjusted with the ALARM knob. Set the ALARM knob to the minimum position to suppress the sound.

Layout of the table of warning messages

A	**Warning indication**	**State**	**WARNING indicator**	**Warning sound**	**REC/TALLY**	**BATT**
	B		C	D	E	E
	Problem		**VDR operation**		**Action to take**	

- The operation of the WARNING indicator and the indicators in the viewfinder is represented by graphic symbols as follows.
  ☼: Continuous
  ☀: 1 flash/s
  ☀)))☼: 4 flashes/s
- The warning sounds are represented by graphic symbols as follows.
  •))))))))))))))))))))))))))))))) : Continuous beep
  •))))))))))))))) : 1 beep/s
  •))) •))) •))) •))) : 4 beeps/s

Error_** a)**

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼	●)))))))))))))))))))))))))))	☼	—
Problem		**VDR operation**		**Action to take**	
Recording error		Recording stops.		Turn off the power and consult a Sony service representative.	

MEM Full!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ b)	●)) ●)) ●)) ●)) b)	☼ b)	—
Problem		**VDR operation**		**Action to take**	
Shockproof memory overflow		Recording continues but may be substandard.		Protect the unit from shocks and vibrations.	

ILL REC!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ b)	●)) ●)) ●)) ●)) b)	☼ b)	—
Problem		**VDR operation**		**Action to take**	
Input sync error		Recording continues but may be substandard.		Turn off the power and contact a Sony service representative. (This indication may be given momentarily when a GENLOCK signal is connected or disconnected, but this does not indicate a problem.)	

Verify ERR!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ b)	●)) ●)) ●)) ●)) b)	☼ b)	—
Problem		**VDR operation**		**Action to take**	
An error was detected in the signals recorded on the disc.		Recording continues but may be substandard.		Exchange the disc.	

Cache Full!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ b)	—	☼ b)	—
Problem		**VDR operation**		**Action to take**	
Cache memory became full during a Disc Exchange Change mode operation.		Video and audio recording may be interrupted.		Exchange the disc quickly.	

Disc Error!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	b)	b)	b)	—

Problem	VDR operation	Action to take
A disc defect was detected.	Recording continues, avoiding the defect, but may be substandard.	If defects are detected repeatedly, exchange the disc.

Before Full h)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
DISC	flash f)	b)		b)	—

Problem	VDR operation	Action to take
Disc almost full.	Operation continues.	Be prepared to exchange the disc.

Near MAX # i)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	b)		(only when recording the 300th clip)	—

Problem	VDR operation	Action to take
Nine or fewer clips remain.	Operation continues.	Be prepared to exchange the disc.

DISC FULL! d)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
DISC and E	flash g)	d)	d)	d)	—

Problem	VDR operation	Action to take
Disc full.	Recording stops.	Exchange the disc.

100GB Disc! j)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—				—

Problem	VDR operation	Action to take
Disc cannot be used in unit.	Automatically ejects.	Exchange the disc.

128GB Disc! k)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—				—

Problem	VDR operation	Action to take
Disc cannot be used.	Automatically ejects.	Exchange the disc.

U1/U2 Disc!/XDS Disc

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	—	—	—	—
Problem		**VDR operation**		**Action to take**	
Disc cannot be salvaged.		Cannot record.		Salvage on device used to record.	

MAX # Clips

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ d)	●))))))))))))))))))))) d)	✳ d)	—
Problem		**VDR operation**		**Action to take**	
The upper limit of 300 recorded clips reached.		Cannot record.		Exchange the disc.	

MAX # Files

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	☼ d)	●))))))))))))))))))))) d)	✳ d)	—
Problem		**VDR operation**		**Action to take**	
The upper limit of files reached.		Cannot record.		Exchange the disc.	

LOW BATT! h)

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
BATT	flash f)	✳	●)))))))))))) e)	✳ e)	✳
Problem		**VDR operation**		**Action to take**	
Battery almost exhausted.		Operation continues.		Replace the battery.	

BATT EMPTY!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
BATT and E	flash g)	☼	●)))))))))))))))))))))	✳	✳
Problem		**VDR operation**		**Action to take**	
Battery exhausted.		Operation stops.		Replace the battery.	

High TEMP!

Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
—	—	✳	●)))))))))))))	✳	—
Problem		**VDR operation**		**Action to take**	
Internal temperature high.		Operation continues.		Power the unit off and move it to a cool place.	

	Warning indication	State	WARNING indicator	Warning sound	REC/TALLY	BATT
ACC Sensor!/ Skew Sensor	—	—	☀	•)))))))))))))	☀	—
	Problem		**VDR operation**		**Action to take**	
	Internal drive sensor error		Operation continues.		Protect the unit from shocks and vibrations, turn off the power, and contact a Sony service representative.	

a) Asterisks (*) are replaced by digits in the display.
b) During recording
c) During playback, fast forward, fast reverse, or stop
d) During recording pause
e) During recording or pause
f) 1 flash/s
g) 4 flashes/s
h) During recording, displayed in the LCD monitor only (When the DISP SEL/EXPAND button is set to STATUS)
i) During recording and recording pause, displayed in the LCD monitor only (When the DISP SEL/ EXPAND button is set to STATUS)
j) When TL-RE (3-layer) disc is inserted
k) When QL-R (4-layer) disc is inserted

For details about the warning displays and alarm messages on the viewfinder, see the next item.

Operation/alarm messages

Operation and alarm messages are displayed in the operation/alarm message display area *(see page 31)* of the viewfinder screen.

AUTO INTERVAL **MS**	The unit is operating in Auto Interval Rec mode (**M**S: Indicates the shooting interval in minutes and seconds).
MANU INTERVAL *FRAME	The unit is operating in the single-shot mode of Manual Interval Rec mode (*FRAME: Indicates the number of frames recorded in one shot).
INTERVAL **S (M/H) *FRAME	The unit is operating in the consecutive mode of Manual Interval Rec mode (**S (M/H): Indicates the trigger interval, in seconds (minutes or hours), *FRAME: Indicates the number of frames recorded in one shot).
LOW LIGHT	Depending on the setting, the subject illumination is inadequate.
ON-BOARD BATTERY EMPTY	The backup battery of the internal clock is empty. [a]
DCP EEPROM DATA NG! DR EEPROM DATA NG! DCP/DR EEPROM DATA NG!	If this message continues to appear even after the unit is powered off and on again several times, then the factory adjustment data is invalid. Contact a Sony service representative.

a) Contact a Sony service representative to replace the battery.

VDR operation messages are displayed in the setting change and adjustment progress message display area of the viewfinder screen *(see page 31)*. Take the actions listed in the following table.

ILL. Disc!	A disc that cannot be used by this unit was inserted. Insert another Professional Disc.
ILL. Index! No FS! Unknown FS!	Index file or file system error. Exchange or format the disc.
No Support!	A recorded clip cannot be handled by this unit. Exchange or format the disc.
FORMAT NG!	The disc could not be formatted automatically. Exchange the disc.
Disc Damage	A disc that cannot be recorded was inserted. To record, exchange the disc.
Non AV Full MAX # Files Over DUR!	The disc is full. Exchange or format the disc.
DI read err Read err DRV ADJ err	The disc was not recognized. Try ejecting the disc and inserting it again. Or exchange the disc.

Run Salvage	A disc that requires salvage was inserted. To record on the disc, eject the disc, insert it again, and execute salvage processing.
Salvage NG!	Salvage processing failed. *For details, see "Handling of discs when recording does not end normally (salvage function)" (page 73).*
Salvage XXXX	The loaded disc cannot be salvaged by this unit. The "XXXX" in the message is a code for XDCAM devices that can salvage the disc. Refer to the list of device codes *(see page 74)* and salvage the disc using one of the indicated devices.
REC INHI.!	The Write Inhibit tab of the disc is in the recording disabled position, or salvage processing needs to be done on the loaded disc. Set the tab to the recording enabled position. Or eject the disc, insert it again, and perform salvage processing.
1080/50i **1080/25P** **1080/59.94i** **1080/29.97P** **1080/23.98P** **720/50P** **720/59.94P** **625/50i** **525/59.94i**	This appears when mixed format recording mode is disabled and the current resolution or system frequency setting of this unit does not match the resolution or system frequency of the inserted disc. To carry out recording operations, exchange the disc, or change the resolution or system frequency setting of this unit, or enable mixed format recording mode.
HD422 1080 **HD422 720** **HD420 1080** **HD420 720** **IMX50 Clip** **IMX40 Clip** **IMX30 Clip** **DVCAM Clip** **8CHx16 Clip** **4CHx24 Clip** **2CHx16 Clip**	This appears when mixed format recording mode is disabled and the current recording format of this unit does not match the recording format of the inserted disc. To carry out recording operations, exchange the disc, or change the recording format of this unit, or enable mixed format recording mode.
System FREQ	This appears when the current system frequency of this unit does not match the system frequency of clips recorded on the inserted disc. To carry out recording operations, exchange the disc, or change the system frequency of this unit.
Mixed REC!	This appears when mixed format recording mode is disabled and the current recording format of this unit does not match the recording format of the inserted disc. To carry out recording operations, exchange the disc, or change the recording format of this unit, or enable mixed format recording mode.
Index File!	There is an unsupported index file on the disc to which you are trying to record. Exchange or format the disc.
File System	There is an unsupported file system on the disc to which you are trying to record. Exchange or format the disc.
ILL. PLAY!	An A/V phase error occurred during playback. Stop the disc.
Lid Closed!	The lid of the disc compartment does not open. Check the lid.
Lid Open!	The lid of the disc compartment is not closed. Close it securely.
No Clip!	There are no clips recorded on the disc. Exchange for a recorded disc.
No Disc!	There is no disc loaded. Insert a disc and try the operation again.
STOP ONCE! **REC mode!**	The operation is not possible while the disc is being played or recorded. Stop the disc.
Loading! **Unloading!**	An operation was attempted while a disc was loading or unloading. Wait for the disc to finish loading or unloading and try again.
Disc Top! **Disc End!**	The operation is not possible because the disc is at the top or end.
Clip Top! **Clip End!**	In single clip playback mode, the specified operation is not possible because playback has reached the top or end of the clip.

Formatting!	The disc is being automatically formatted. Wait until the format ends.
Recording	The unit is writing to the file system. Wait until writing finishes.
No EM Space EM Full!	Essence marks cannot be inserted. *For details, see* “Recording essence marks” (page 80).
Cache REC!	An attempt was made to perform an operation that cannot be performed when the picture cache function is enabled. The operation will be ignored.
Disc Exchag!	An attempt was made to perform an operation that cannot be performed when the disc exchange cache function is enabled. The operation will be ignored.
Live Logg!	An attempt was made to perform an operation that cannot be performed when the Live Logging function is set to Live View mode. The operation will be ignored.
SB CLP mode	An essence mark or clip flag operation was attempted while the SUB CLIP indicator was lit. Press the SUB CLIP/DISC MENU button to turn the indicator off and try again.
No SEL List	No clip list is selected. Create a new clip list, or load a clip list from the disc.
No List!	There is no clip list. Create a clip list.
No SUB Clip	There are no sub clips in the clip list. Register a sub clip, or load another clip list.
SUB Clip NG	The In and Out point positions are invalid. Set correct In and Out points.
MAX# SB CLP	The total number of sub clips is over the upper limit (300).
Resolution	An attempt was made to register a clip in a clip list with a different resolution.
CL OVER DUR	The total duration of sub clips in the current clip list is over the upper limit (24 hours).
FAN Stopped DR-FAN Stop	The main unit or drive fan has stopped. Avoid use under high temperatures, turn off the power, and contact a Sony service representative.
NVRAM NG!	An error was detected while accessing internal memory. Power the unit off and contact a Sony service representative.
Update Err!	A firmware update failed. Power the unit off and contact a Sony service representative.
Unknown USB	An unsupported USB device was connected to this unit.
NO USB MEMORY!	A USB flash drive write operation was attempted with no USB flash drive connected.
USB MEMORY INHIBIT! USB M. INHI	A write inhibited USB flash drive was connected with MEMORY REC on the MEMORY REC page of the OPERATION menu set to ENABL.
USB MEMORY ERROR!	The connected USB flash drive was not usable when a USB flash drive write operation was attempted.
M. Shortage	A USB flash drive write operation was attempted without enough free memory in the USB flash drive.
USB MEMORY FULL!	A USB flash drive write operation was attempted without free memory in the USB flash drive.
MEM REC NG!	A USB flash drive write operation failed with MEMORY REC on the MEMORY REC page of the OPERATION menu set to ENABL.
M. access!	An attempt was made to switch GUI screens during a USB flash drive write operation.
ILL. TIME	A clock error has occurred. Set the date and time of the internal clock again.

Alarm messages during thumbnail search, scene selection, and clip list operations

An alarm message may appear in the LCD monitor during thumbnail search, scene selection, and clip list operations. In that case, take the action indicated in the following table.

Cannot Expand Clip any Further.	The clip cannot be expanded into more blocks. This alarm appears when the DISP SEL/EXPAND button is pressed when the number of blocks is maximum, or when the duration of an expanded thumbnail is one frame.
Selected Essence Mark Does not Exist.	The selected essence mark does not exist. This alarm appears in the essence mark selection screen when the specified essence mark does not exist on the disc.
Sub Clip is Invalid. Set Appropriate IN/OUT Points.	The temporal relationship between the specified In and Out points in a TRIM operation *(see page 128)* is not correct. Reset so that the value of the Out point timecode is larger than the value of the In point timecode.
Duration of One Clip List must be Less than 24 Hours.	The total duration of the current clip list exceeds the upper limit of 24 hours as the result of an Add Sub Clips *(see page 126)* or Trim Sub Clip *(see page 128)* operation.
No More Sub Clips can be Added to the Clip List.	The total number of the sub clips of the current clip list exceeds the upper limit of 300 as the result of an Add Sub Clips *(see page 126)* or Trim Sub Clip *(see page 128)* operation.
Sub Clip does not Exist.	An attempt is made to execute a Move Sub Clips *(see page 127)*, Trim Sub Clip *(see page 128)*, Delete Sub Clips *(see page 128)*, or Set Start Time Code *(see page 129)* operation with no sub clips in the current clip list.
Clip List does not Exist.	An attempt is made to execute a Delete Clip List operation *(see page 130)* when there are no clip lists on the disc.
Move is Invalid.	An attempt is made to execute a Move Sub Clips operation *(see page 127)* when there are no sub clip in the current clip list, or when there is only one.
Shot Mark does not Exist.	An attempt is made to execute a Delete Shot Mark *(see page 115)* operation on a clip with no shot marks recorded in.
Chapter does not Exist.	An attempt was made to display a nonexistent chapter.
Some Essence Mark cannot be Deleted.	An attempt is made to delete an essence mark that cannot be deleted with a Delete Essence Mark operation. Rec Start and Cut essence marks cannot be deleted.
Some Essence Mark cannot be Moved.	An attempt is made to move an essence mark that cannot be moved with a Move Essence Mark operation. Rec Start and Cut essence marks cannot be moved.
Command Disabled.	An attempt was made to execute the Format Disc command with Setting Format Disc set to “Disable”.
Clip is Locked.	An attempt is made to delete a clip, set the clip thumbnail, or delete a shot mark when the clip is locked.
All Clips are Locked.	An attempt is made to execute a Lock All Clips operation when all clips are already locked.
All Clips are Unlocked.	An attempt is made to execute an Unlock All Clips operation when all clips are already unlocked.
A File with the Name you Specified Already Exists. Specify a Different Name.	A file name that was specified in a Set Clip Name operation already exists.
Set NAMING FORM to “free”	An attempt was made to rename a clip with Set Clip Name when NAMING FORM is not set to “FREE” *(see page 92)*.

“No Flash Drive”	In the media selection screen of the Load Planning Metadata/ Select Drive command, “USB Flash Drive” was selected with no USB flash drive connected.
Not Loaded.	A command related to planning metadata was executed with no planning metadata loaded. Try again after loading planning metadata.
Syntax Error!	Loading of planning metadata failed because of a syntax error. Correct the error and try loading it again.
Irregular Disc is Used. Use Professional Disc.	The inserted disc cannot be recorded or played. This unit can record and play Professional Discs. Insert a Professional Disc.
The Disc Write Protect TAB is set to Save.	An attempt was made to format a write protected disc. Try formatting the disc after moving the write protect tab away from the Save position.
Auto Formatting was not Completed.	Automatic disc formatting failed.
Video Resolution Differ from it on Clip List.	An attempt was made to add a clip to a clip list when the video resolution (number of system lines) did not match the video resolution of clips in the clip list. Clips cannot be added to a clip list unless the video resolution matches.
No Clip Meets the Condition.	No clip meeting the clip filtering conditions was found.

Appendix

Important Notes on Operation

Use and storage

Do not subject the unit to severe shocks
The internal mechanism may be damaged or the body warped.

Do not cover the unit while operating
Putting a cloth, for example, over the unit can cause excessive internal heat build-up.

After use
Always turn off the POWER switch.

Before storing the camcorder for a long period
Remove the battery pack.

Shipping
- Remove the disc before transporting the unit.
- If sending the unit by truck, ship, air or other transportation service, pack it in the shipping carton of the unit.

Care of the unit
Remove dust and dirt from the surfaces of the lenses or optical filters using a blower.
Do not clean the interior of the camera using a blower. Any dust particles in the air could be forced into internal components and may cause a malfunction.
If the body of the unit is dirty, clean it with a soft, dry cloth. In extreme cases, use a cloth steeped in a little neutral detergent, then wipe dry. Do not use organic solvents such as alcohol or thinners, as these may cause discoloration or other damage to the finish of the unit.

In the event of operating problems
If you should experience problems with the unit, contact a Sony representative.

Use and storage locations

Store in a level, ventilated place. Avoid using or storing the unit in the following places.
- In excessive heat or cold (operating temperature range: –5 °C to +40 °C (23 °F to 104 °F))
- Remember that in summer in warm climates the temperature inside a car with the windows closed can easily exceed 50 °C (122 °F).
- In damp or dusty locations
- Locations where the unit may be exposed to rain
- Locations subject to violent vibration
- Near strong magnetic fields
- Close to radio or TV transmitters producing strong electromagnetic fields.
- In direct sunlight or close to heaters for extended periods

To prevent electromagnetic interference from portable communications devices
The use of portable telephones and other communications devices near this unit can result in malfunctions and interference with audio and video signals.
It is recommended that the portable communications devices near this unit be powered off.

Note on laser beams
Laser beams may damage the CCDs.
If you shoot a scene that includes a laser beam, be careful not to let the laser beam be directed into the lens of the camera.

Condensation

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.
Do the following to prevent this from happening.
- When you move or operate the camcorder in an environment where condensation may form, be sure to load a disc in advance and close the disc compartment lid.

For details, see "Loading and unloading a disc" (page 72).

Fitting the zoom lens

It is important to fit the lens correctly, as otherwise damage may result. Be sure to refer to the section “Mounting the Lens” *(page 40)*.

Viewfinder

- Do not leave the unit with the eyepiece pointing directly at the sun.
  The eyepiece lens can concentrate the sun’s rays and melt the interior of the viewfinder.
- Do not use the viewfinder close to strong magnetic fields. This can cause picture distortion.

About the LCD panels

The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion of pixels may be “stuck”, either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such “stuck” pixels may appear spontaneously. These problems are not a malfunction. Note that any such problems have no effect on recorded data.

Phenomena specific to image sensors

Note

The following phenomena that may occur in images are specific to image sensors. They do not indicate a malfunction.

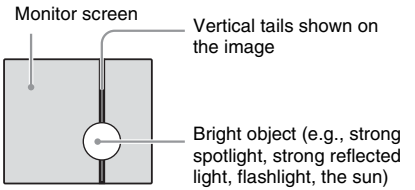
White flecks

Although the image sensors are produced with high-precision technologies, fine white flecks may be generated on the screen in rare cases, caused by cosmic rays, etc.
This is related to the principle of image sensors and is not a malfunction.
The white flecks especially tend to be seen in the following cases:

- when operating at a high environmental temperature
- when you have raised the gain (sensitivity)
- when using the slow shutter

Vertical smear

When an extremely bright object, such as a strong spotlight or flashlight, is being shot, vertical tails may be produced on the screen, or the image may be distorted.


Monitor screen
Vertical tails shown on the image
Bright object (e.g., strong spotlight, strong reflected light, flashlight, the sun)

Aliasing

When fine patterns, stripes, or lines are shot, they may appear jagged or flicker.

Specifications

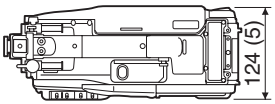
General

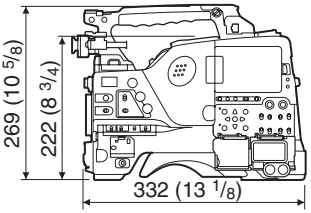
Mass

Approx. 4.1 kg (9 lb 0.6 oz) (body only)
Approx. 6.1 kg (13 lb 7.2 oz) (with viewfinder, microphone, disc, and BP-FLX75 battery)

Dimensions

Unit: mm (inches), excluding protrusions, body only [1)]





1) The values for dimensions are approximate.

Power requirements

12 V DC (+5.0 V/−1.0 V DC)

Power consumption

Approx. 37 W
When recording (body only), LCD monitor on, VDR SAVE/STBY switch set to SAVE
Approx. 41 W
When recording (viewfinder, manual lens, and microphone attached), LCD monitor on, VDR SAVE/STBY switch set to SAVE

Notes

- Do not connect video lights with power consumption of 50 W or higher.
- When using battery with peripheral equipment attached to the camcorder, ensure that the total power consumption does not exceed 40 W.
- When using the AC-DN10 with peripheral devices attached to the camcorder, ensure that the total power consumption does not exceed 50 W.
- When using the AC-DN2B with peripheral devices attached to the camcorder, ensure that the total power consumption does not exceed 60 W.
- Connect only devices with current consumption of 1.0 A or lower to the DC OUT connector.
- When using an optional CA-FB70/TX70 Camera Adaptor with peripheral devices attached to the camcorder, ensure that the total power consumption[1)] does not exceed 67 W.

1) The power consumption of the optional CA-FB70/CA-TX70 is not included in the total.

Operating temperature

–5 °C to +40 °C (23 °F to 104 °F)

Storage temperature

–20 °C to +60 °C (–4 °F to +140 °F)

Humidity

10% to 90% (relative humidity)

Continuous operating time

Approx. 115 min. with BP-L80S battery
Approx. 100 min. with BP-FL75 battery

Recording format (video)

MPEG HD422 (CBR: 50 Mbps)
MPEG HD:
HQ mode (VBR, 35 Mbps max.)
SP mode (CBR, 25 Mbps)
LP mode (VBR, 18 Mbps max.) (playback only)
MPEG IMX (CBR, 50/40/30 Mbps)
DVCAM (CBR, 25 Mbps)

Recording format (audio)

MPEG HD422: 4 ch/24 bits/48 kHz
MPEG HD: 4 ch/16 bits/48 kHz
MPEG IMX: 4 ch/24 bits/48 kHz or 4 ch/16 bits/48 kHz
DVCAM: 4 ch/16 bits/48 kHz

Recording format (proxy video)

MPEG-4

Recording format (proxy audio)

A-law (4 ch/8 bits/8 kHz)

Recording/playback time (MPEG HD422)

50 Mbps: Approx. 95 min. (PFD50DLA), Approx. 43 min. (PFD23A)

Recording/playback time (MPEG HD)

35 Mbps, 4-ch audio: More than 145 min. (PFD50DLA), More than 65 min. (PFD23A)

35 Mbps, 2-ch audio (playback only): More than 150 min. (PFD50DLA), More than 68 min. (PFD23A)

25 Mbps, 4-ch audio: Approx. 190 min. (PFD50DLA), Approx. 85 min. (PFD23A)

25 Mbps, 2-ch audio (playback only): Approx. 200 min. (PFD50DLA), Approx. 90 min. (PFD23A)

18 Mbps, 4-ch audio (playback only): More than 248 min. (PFD50DLA), More than 112 min. (PFD23A)

18 Mbps, 2-ch audio (playback only): More than 265 min. (PFD50DLA), More than 122 min. (PFD23A)

Recording/playback time (MPEG IMX)

50 Mbps: Approx. 100 min. (PFD50DLA), Approx. 45 min. (PFD23A)

40 Mbps: Approx. 120 min. (PFD50DLA), Approx. 55 min. (PFD23A)

30 Mbps: Approx. 150 min. (PFD50DLA), Approx. 68 min. (PFD23A)

Recording/playback time (DVCAM)

25 Mbps: Approx. 185 min. (PFD50DLA), Approx. 85 min. (PFD23A)

Recording frame rate

MPEG HD422 50 Mbps:
1920 × 1080/59.94i, 29.97p, 50i, 25p, 23.98p
1280 × 720/59.94p, 50p

MPEG HD420 (HQ 35 Mbps, SP 25 Mbps):
1440 × 1080/59.94i, 29.97p, 50i, 25p, 23.98p
1280 × 720/59.94p, 50p

MPEG HD420 (LP 18 Mbps):
1440 × 1080/59.94i, 29.97p, 50i, 25p, 23.98p (playback only)

MPEG IMX 50/40/30 Mbps/DVCAM mode:
720 × 486/59.94i, 29.97p
720 × 576/50i, 25p

Lens

Lens mount

$^{2}/_{3}$-inch type 48 bayonet mount

Input/output

Inputs

Genlock input

BNC type (1)
1.0 Vp-p, 75 Ω

Timecode input

BNC type (1)
0.5 Vp-p to 18 Vp-p, 10 kΩ

SDI input

BNC type (1)
HD/SD switchable
HD-SDI: SMPTE 292M (with embedded audio)
SD-SDI: SMPTE 259M (with embedded audio)

Audio input

CH-1/CH-2: XLR-type 3-pin (female) (2)
Line/Mic/Mic +48V/AES/EBU selectable

Microphone input

XLR-type 5-pin (female, stereo) (1)

Outputs

Test output
BNC (1), switchable
HD: Y
SD: composite (character on/off)

SDI outputs
BNC type (2)
1 (HD/SD switchable):
HD-SDI: SMPTE 292M (with embedded audio)
SD-SDI: SMPTE 259M (with embedded audio)
2 (HD/SD switchable, character on/off)
HD-SDI: SMPTE 292M (with embedded audio)
SD-SDI: SMPTE 259M (with embedded audio)

Audio output
CH-1/CH-2: XLR-type 5-pin (male, stereo) (1)

Timecode output
BNC type (1)
1.0 Vp-p, 75 Ω

Earphone output
Mini-jack (2)
Front: monaural
Rear: stereo/monaural

Speaker output
Monaural

Others

DC input
XLR-type 4-pin (male) (1)
11 V to 17 V

DC output
4-pin (1) (for wireless adaptor or UHF synthesized diversity tuner)
11 V to 17 V DC (max. 1 A)

Lens
12-pin

Remote
8-pin

Light
2-pin, DC 12 V, max. 50 W

Camera adaptor
50-pin (1)

Ethernet
RJ-45 (1)
100BASE-TX: IEEE 802.3u
10BASE-T: IEEE 802.3

USB
For proxy recording on USB flash drive and firmware version update (1)

Audio performance

Frequency response
20 Hz to 20 kHz, +0.5 dB/–1.0 dB

Dynamic range
93 dB or higher

Distortion
0.08% or lower (at 1 kHz, reference level)

Crosstalk
–70 dB or lower (at 1 kHz, reference level)

Wow and flutter
Below measurable limit

Headroom
12/16/18/20 dB (selectable)

Camera section

Imager
3-chip $^{2}/_{3}$-inch type HD PowerHAD FX CCDs

Effective Picture Elements
1920 (H) × 1080 (V)

Optical system
F1.4 prism system

Built-in optical filters
CC filter (optical)
A: Cross filter
B: 3200K
C: 4300K
D: 6300K

ND filter (optical)
1: Clear
2: 1/4 ND
3: 1/16 ND
4: 1/64 ND

Shutter speed (time)
1080/59.94i: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
1080/50i: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
1080/29.97p: 1/40, 1/60, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
1080/25p: 1/33, 1/50, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
1080/23.98p: 1/32, 1/48, 1/50, 1/60, 1/96, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
720/59.94p: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]
720/50p: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS[1], SLS[2]

1) ECS: Extended Clear Scan
2) SLS: Slow Shutter

Shutter speed (Slow Shutter (SLS))
2, 3, 4, 5, 6, 7, 8, 16 frame

Slow & Quick Motion function
(MPEG HD422 50M/1080 mode only)
23.98p: Selectable from 1 to 48 frame/sec as recording frame rate
25p: Selectable from 1 to 50 frame/sec as recording frame rate
29.97p: Selectable from 1 to 59.94 frame/sec as recording frame rate

Sensitivity (2000 lx, 89.9% reflectance)
1080/59.94i: F11 (typical)
1080/50i: F12 (typical)

Minimum illumination
Approx. 0.3 lx (F1.4 lens, +42 dB, with slow shutter: Off)

White balance
Preset (3200K), Memory A, Memory B/ATW

Gain selection
−6, −3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42 dB

S/N ratio
62 dB (58 dB without noise suppressor)

Horizontal resolution
1000 TV lines or more (1920 × 1080i mode)

Registration
0.02% or less for entire screen area (excluding distortion due to lens)

Modulation depth (screen center)
45% or higher at 27.5 MHz (typical)

Digital extender
x2, x3, x4

Viewfinder and related equipment

Viewfinder
HDVF-EL20

Viewfinder Rotation Bracket
BKW-401

Note

Contact a Sony service representative for information about the viewfinders able to use the BKW-401.

Other equipment

Built-in LCD monitor
3.5-inch type color LCD monitor
960 × 540 [1]

1) Viewable area measured diagonally.

Built-in speaker (1)

Optical disc drive section

General

Supported discs
PFD50DLA Professional Disc (capacity: 50.0 GB)
PFD23A Professional Disc (capacity: 23.3 GB)

Data transfer rate
Max. 72 Mbps

Digital video performance

Sampling frequency
Y: 74.176 MHz (59.94i), 74.25 MHz (50i/25P)
Pb/Pr: 37.088 MHz (59.94i), 37.125 MHz (50i/25P)

Quantization
8 bits/sample

Compression
MPEG-2 4:2:2P@HL 50 Mbps

Supplied accessories

Shoulder strap (1)
Microphone cable (1)
Microphone spacer (1)
Lens mount cap (1)
Operation Guide (1)
Operation Manual (CD-ROM) (1)

Additional equipment

Power supply and related equipment

BP-FLX75 Battery Pack

BC-L160/L500/L70A Battery Charger

AC-DN10/DN2B AC Adaptor

Equipment for remote control

RM-B170 Remote Control Unit

Audio equipment

ECM-680S Stereo/Monaural Microphone

ECM-678/673 Monaural Microphone

CAC-12 Microphone Holder

DWR-S02DN Digital Wireless Receiver

URX-S03D UHF Synthesized Diversity Tuner

DWT-B01N Digital Wireless Transmitter

UTX-B03/B03HR UHF Synthesized Transmitter

DMX-P01 Portable Digital Mixer

Other peripheral devices

CBK-WA01 Wi-Fi Adaptor

CBK-WA100 Wireless Adaptor

PDW-HR1 XDCAM HD422 Field Station

CA-FB70 Camera Adaptor

CA-TX70 Camera Adaptor

Equipment for maintenance and easier handling

LC-H300 Hard Carrying Case

LC-DS300SFT Soft Carrying Case

VCT-14 Tripod Adaptor

Maintenance Manual

Design and specifications are subject to change without notice.

(Only when using the CBK-WA01 Wi-Fi Adaptor)
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Notes

- Always make a test recording, and verify that it was recorded successfully.
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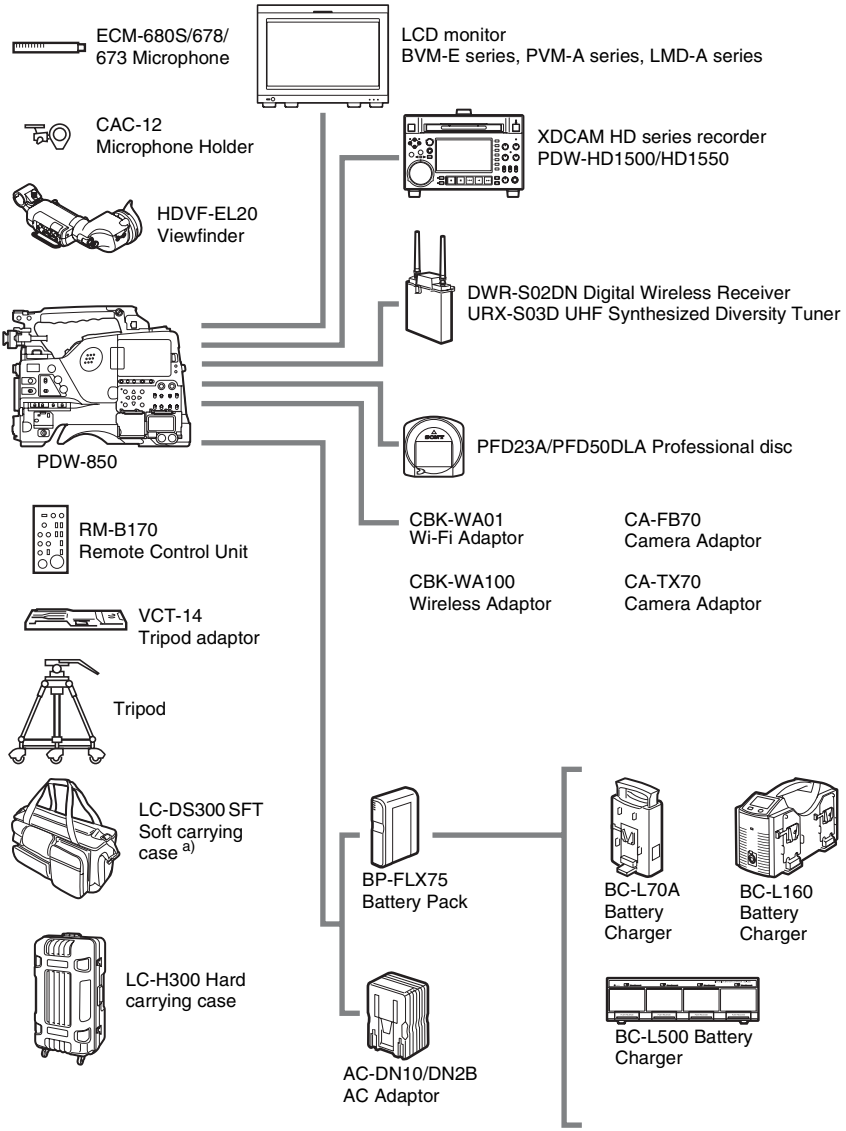
Chart of Optional Components and Accessories



a) The carrying case is large enough to hold the camcorder with lens and microphone mounted. However, remove them if they protrude more than 25 cm from the front of the main unit.

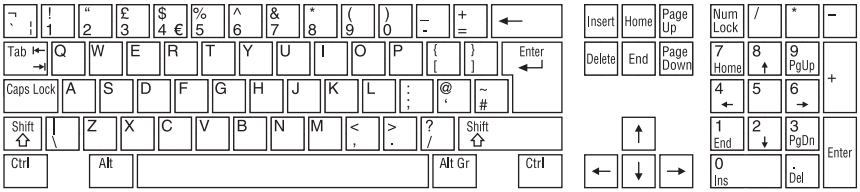
List of Supported USB Keyboards

When the area of use is set to NTSC AREA/PAL AREA and the font setting is European Alphabet [1)]

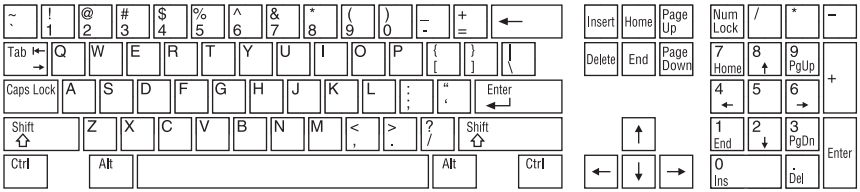
On this unit, you can enter any of the characters and symbols supported by the keyboards listed below.
Select the corresponding language by selecting Settings >Select USB Keyboard Language in the Disc Menu *(see page 120)*.

1) When the font setting is “Simplified Chinese” or “Traditional Chinese”, a keyboard with the same layout as the English [United States] keyboard is selected automatically.

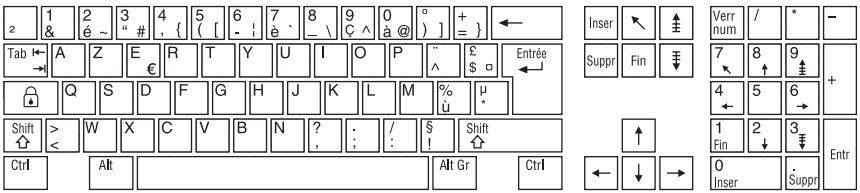
English [United Kingdom]



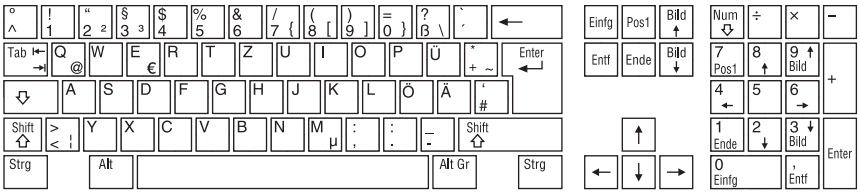
English [United States]



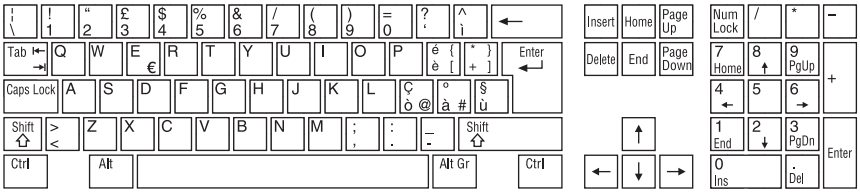
French [France]



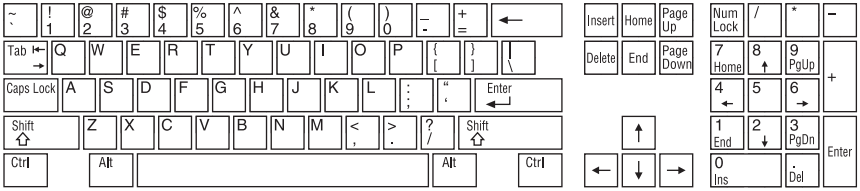
German [Germany]


° ^ ! 1 " 2 ² § 3 ³ $ 4 % 5 & 6 / 7 { (8 [ ) 9] = 0 } ? ß \ ` ´
Tab Q @ W € E R T Z U I O P Ü * + ~ Enter
A S D F G H J K L Ö Ä ' #
Shift > < ! Y X C V B N M µ : , : . _ - Shift
Strg Alt Alt Gr Strg
Einfg Pos1 Bild ↑
Entf Ende Bild ↓
Num ÷ × −
7 Pos1 8 ↑ 9 Bild +
4 ← 5 6 →
1 Ende 2 ↓ 3 Bild
0 Einfg , Entf Enter

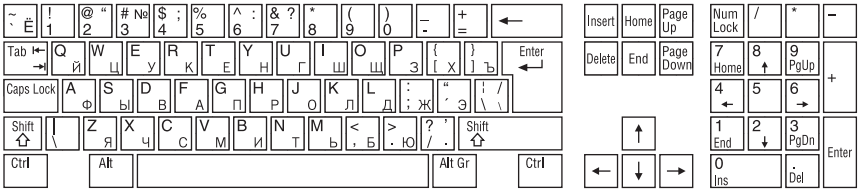
Italian [Italy]


¦ \ ! 1 " 2 £ 3 $ 4 % 5 & 6 / 7 (8) 9 = 0 ? ' ^ ì
Tab Q W E € R T Y U I O P é { è [* } +] Enter
Caps Lock A S D F G H J K L Ç ò @ ° à # § ù
Shift > < Z X C V B N M ; , : . _ - Shift
Ctrl Alt Alt Gr Ctrl
Insert Home Page Up
Delete End Page Down
Num Lock / * −
7 Home 8 ↑ 9 PgUp +
4 ← 5 6 →
1 End 2 ↓ 3 PgDn
0 Ins . Del Enter

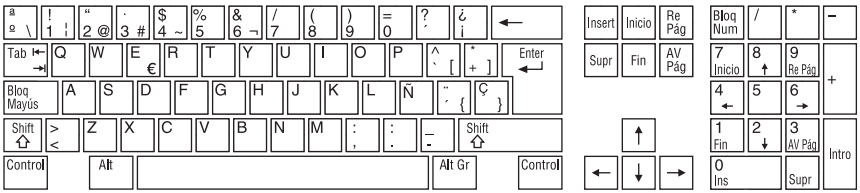
Polish (Programmers) [Poland]


~ ` ! 1 @ 2 # 3 $ 4 % 5 ^ 6 & 7 * 8 (9) 0 _ - + =
Tab Q W E R T Y U I O P { [}] | \
Caps Lock A S D F G H J K L : ; " ' Enter
Shift Z X C V B N M < , > . ? / Shift
Ctrl Alt Alt Ctrl
Insert Home Page Up
Delete End Page Down
Num Lock / * −
7 Home 8 ↑ 9 PgUp +
4 ← 5 6 →
1 End 2 ↓ 3 PgDn
0 Ins . Del Enter

Russian [Russia]


~ ` Ё ! 1 @ " 2 # № 3 $; 4 % 5 ^ : 6 & ? 7 * 8 (9) 0 _ - + =
Tab Q Й W Ц E У R К T Е Y Н U Г I Ш O Щ P З { [}] Х Ъ Enter
Caps Lock A Ф S Ы D В F А G П H Р J О K Л L Д : ; Ж " ' Э | \ / \
Shift | \ Z Я X Ч C С V М B И N Т M Ь < , Б > . Ю ? / . Shift
Ctrl Alt Alt Gr Ctrl
Insert Home Page Up
Delete End Page Down
Num Lock / * −
7 Home 8 ↑ 9 PgUp +
4 ← 5 6 →
1 End 2 ↓ 3 PgDn
0 Ins . Del Enter

Spanish [Spain]

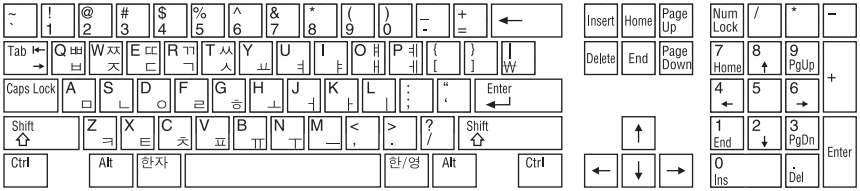

ª º \ ! 1 ¡ " 2 @ · 3 # $ 4 ~ % 5 & 6 ¬ / 7 (8) 9 = 0 ? ' ¿ ¡
Tab Q W E € R T Y U I O P ^ ` [* +] Enter
Bloq Mayús A S D F G H J K L Ñ ¨ ´ { Ç }
Shift > < Z X C V B N M : , : . _ - Shift
Control Alt Alt Gr Control
Insert Inicio Re Pág
Supr Fin AV Pág
Bloq Num / * −
7 Inicio 8 ↑ 9 Re Pág +
4 ← 5 6 →
1 Fin 2 ↓ 3 AV Pág
0 Ins Supr Intro

When the area of use is set to NTSC AREA/PAL AREA and the font setting is Korean

The keyboard is fixed as the Korean keyboard, and you can enter Hangul characters.

Note

The keyboard language cannot be changed.



When the area of use is set to NTSC(J)AREA

The keyboard is fixed as the Japanese keyboard.

Notes

- The keyboard language cannot be changed.
- It is not possible to enter Japanese hiragana, katakana, and kanji.

Recommended USB Flash Drives (As of April 2014)

The following Sony USB flash drives are recommended for use with this unit.

Pocket Bit QX series

- USM128GQX
- USM64GQX
- USM32GQX
- USM16GQX
- USM8GQX

Pocket Bit T series

- USM128GT
- USM64GT
- USM32GT
- USM16GT
- USM8GT

Pocket Bit U series

- USM128GU
- USM64GU
- USM32GU
- USM16GU
- USM8GU

Note

USB flash drives other than the recommended flash drives listed above may not be recognized when connected to the USB connector.

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About IJG (Independent JPEG Group)

This software is based in part on the work of the Independent JPEG Group.

Character display software “iType”

This product includes technology from Monotype Imaging Inc., including iType® and certain fonts.

About libupnp

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About GPS

What is GPS?

GPS (Global Positioning System) is a system for determining your exact location anywhere on the planet, using a constellation of high-precision satellites launched by the U.S.A.
The system is composed of a minimum of 24 GPS satellites, four each in six orbits at an altitude of approximately 20,000 km (12,400 miles). Signals are received from GPS satellites and are used to calculate your location based on satellite orbital information (almanac data) and the signal propagation time data.
Calculating your location is called positioning. If signals are received from three or more satellites, the latitude and longitude of a location can be determined.

- The positions of the GPS satellites is constantly changing, hence the time required for positioning may vary or positioning may not be possible, depending on the location and time of use.
- GPS is a positioning system that receives signals from satellites. GPS should be used in locations with a clear view of the sky to prevent obstruction or reflection of the GPS signals by nearby buildings, trees, and other tall structures.
- Positioning information may not be recorded in the following locations and conditions where signals from GPS satellites cannot be received.
  - In tunnels, indoors, or beside buildings
  - In narrow roadways between buildings and skyscrapers
  - Underground, in dense areas of vegetation, under overhead structures, or near power lines or other equipment that generate magnetic fields
  - Near 1.5 GHz band mobile phones or other equipment that emit radio waves of the same frequency

Errors in positioning

- Immediately after setting [GPS SETTING] to ON, positioning may take longer if you are moving, compared to the time taken if you are stationary.
- Error due to GPS satellites
  The unit automatically calculates your location when it receives signals from three or more GPS satellites. The positioning accuracy enabled by GPS satellites is about 10 m (33 ft), but larger errors in positioning may occur due to the surroundings when positioning is used. Accordingly, your actual location and the location shown on a map may vary. In addition, the GPS satellites are managed by the U.S. Department of Defense, and the accuracy of the system may be altered intentionally.
- Error due to positioning time
  The unit obtains positioning information at regular intervals during positioning.

Restrictions

Always use the GPS function in accordance with the rules and regulations of the country and/or region of use.

Geodetic reference system

The unit uses the “WGS-84” geodetic reference system.

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